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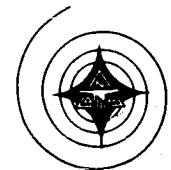
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SID 63-517C

APOLLO COMMAND MODULE/SERVICE  
MODULE MEASUREMENT REQUIREMENTS  
SPACECRAFT 017 AND 020

NAS9-150

19 September 1966



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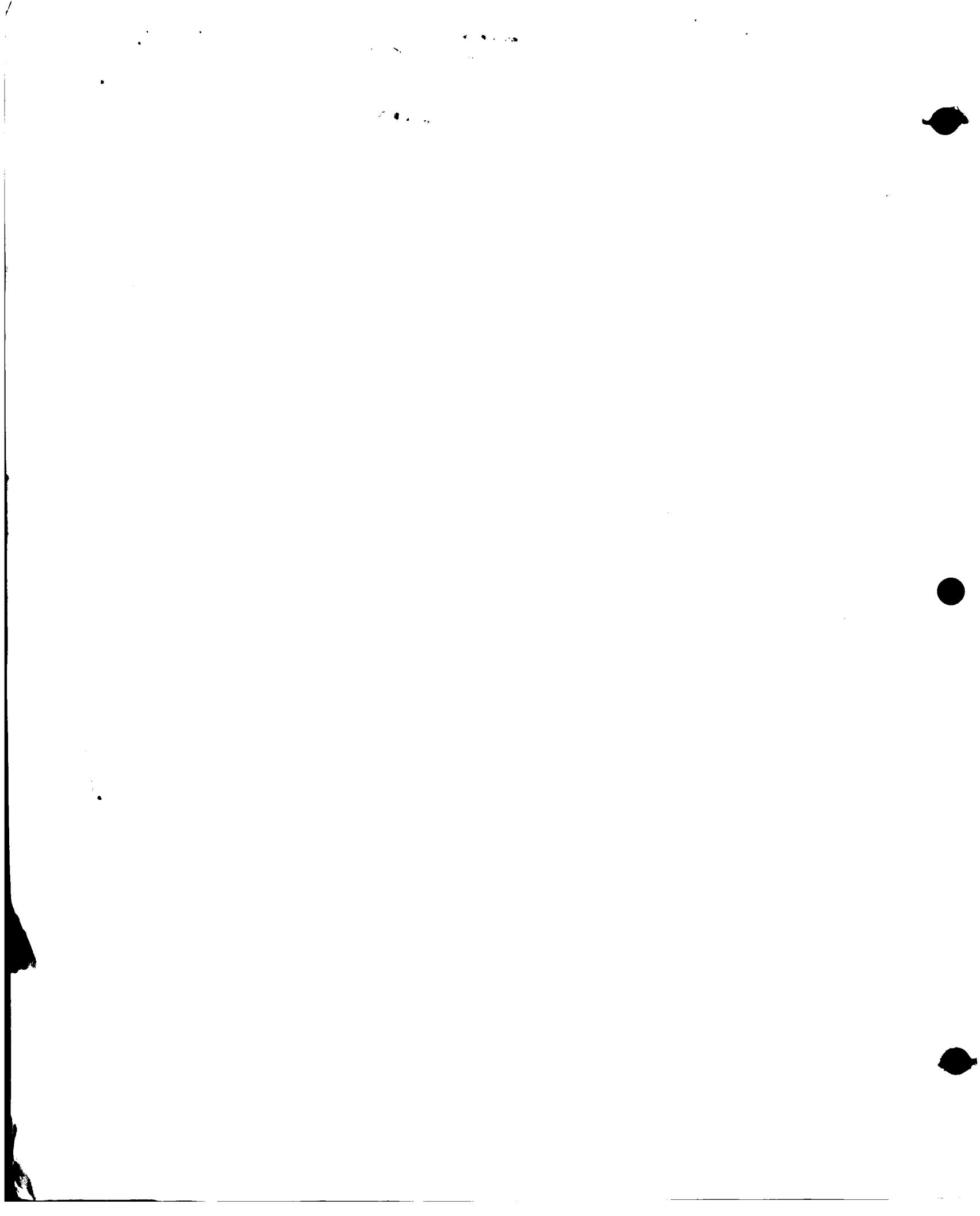
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REQUIREMENTS SPACECRAFT 017 AND 020  
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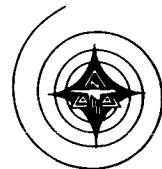
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APOLLO COMMAND MODULE/SERVICE  
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SPACECRAFT 017 AND 020



NAS9-150

19 September 1966

Exhibit I, Paragraph 5.12

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## INTRODUCTION

This document presents the official Apollo command module/service module measurement requirements for Spacecraft 017 and 020, as of 19 September 1966. The changes incorporated into the requirement list are the result of NAA/NASA specification change notifications (SCN's) and NAA MCR's. The requirements included are to be implemented by Apollo Engineering. The illustrations used are not scaled drawings and are not to be construed as final configurations. They are intended for quick reference to aid in visualizing the various subsystems capabilities.

Measurement requirements for other Apollo Block I vehicles are available in the following documents:

Document	Description
SID 63-508	Spacecraft 008
SID 63-509	Spacecraft 009
SID 63-511	Spacecraft 011
SID 63-512	Spacecraft 012 and 014
SID 63-580	SLA-7 (Boilerplate 30)
SID 65-1641	Block I Measurement Requirement Specification

This measurement requirement document is not suitable for general distribution or referencing. It may be referenced only in other working documents by participating organizations.



## I. REQUIREMENTS DISCUSSION

### MISSION OBJECTIVES

The basic spacecraft objectives for Missions AS-501A (SC 017) and AS-502A (SC 020) which influence this measurement requirements document are presented below. The list is included here as a convenience and is to be used for information only. Official test objectives are contained in SID 65-306-1, Vehicle Plan for Spacecraft 017, Section I, Vehicle Test Plan.

#### PRIMARY OBJECTIVES

The primary objectives are as follows:

- P1. Demonstrate the structural and thermal integrity and compatibility of the launch vehicle and spacecraft. Confirm launch loads and dynamic characteristics.
- P2. Demonstrate normal separation of the LES and BPC from the CSM.
- P3. Verify operation of the following spacecraft subsystems: CM heat shield (adequacy of Block II design for entry at lunar return conditions), SPS (no ullage start) and selected subsystems.
- P4. Evaluate the performance of the space vehicle EDS in the open loop configuration (AS-501A) and in the closed loop configuration (AS-502A).

#### SECONDARY OBJECTIVES

The secondary objectives are these:

- S1. Obtain data on the radiation environment inside the CM (NASA responsibility).
- S2. Demonstrate the satisfactory operation of the CSM communication subsystem, using the Block II type VHF omnidirectional antennas.
- S3. Demonstrate satisfactory CSM subsystem performance in the space environment, before and after separation from the S-IVB and during entry.



## SUBSYSTEMS MEASUREMENTS DISCUSSION

The measurements list for each subsystem is discussed briefly in the following paragraphs and the illustrations referenced appear in Section II of this document.

### STRUCTURES

There are 284 measurements for this subsystem and of these, 211 are implemented for the certification of the heat shield. The remaining measurements are used to demonstrate structural integrity. Figures 2-5 through 2-21 illustrates the measurement points.

### ELECTRICAL POWER

Flight measurements of the electrical power subsystem include battery voltages, main bus voltages, inverter temperature, a-c bus voltages and phase relationships, and parameters necessary for determining fuel cell operation status.

### MASTER EVENTS AND EARTH LANDING SEQUENCE CONTROLLERS

The measurements consist of the standard operational and prelaunch checkout parameters of sequence control of relay operations.

### ENVIRONMENTAL CONTROL

Measurements taken on the environmental control subsystem are concerned with the cryogenic storage tank quantities, pressures, and temperatures. The coldplate circuit is also implemented with temperature and pressure transducers as flight qualification measurements.

### GUIDANCE AND NAVIGATION

The measurement for guidance and control are obtained from Massachusetts Institute of Technology through NASA MSC. Measurement points are shown in Figures 2-26 and 2-27.

### STABILIZATION AND CONTROL

The measurement list represents the measurement points provided by the subcontractor for monitoring subsystem operation.



## CREW EQUIPMENT

There will be no crew equipment on board because Spacecraft 017 and 020 are unmanned vehicles.

## FLIGHT TECHNOLOGY

A Government-furnished dosimeter will be on board Spacecraft 020. Three measurements (CK1051K, CK1052K, and CK1053T) on the radiation measuring unit will be telemetered utilizing the pulse code modulator.

## SERVICE PROPULSION

Data including helium, fuel, and oxidizer status, and engine valve/chamber pressure and temperature are taken before launch and during flight. Additional flight qualification temperature measurements on the gimbal actuator cases, oxidizer and fuel heat exchanger helium inlet and outlet, and engine nozzle are used for post flight analysis of the thermal behavior of the service propulsion subsystem.

## REACTION CONTROL

The measurements of pressures and temperatures will provide information on the pre-pressurized reaction control subsystem status. Flight qualification temperature measurements on the command and service module reaction control subsystem engine injector head and engine walls will allow some thermal analysis on the engine performance.

## COMMUNICATIONS AND INSTRUMENTATION

The measurement points for the communication and instrumentation subsystem are shown in Figures 2-37 through 2-48.

## LAUNCH VEHICLE EMERGENCY DETECTION

The launch vehicle emergency detection subsystem measurements provide data on booster operation. Operational data on the NASA emergency detection subsystem are telemetered from the Apollo pulse code modulator. Figure 2-49 shows the measurement points.



## MEASUREMENT CLASSIFICATIONS

All Apollo spacecraft measurements are divided into two classifications: operational and flight qualification. The two classifications are in turn subdivided into four categories as outlined below and in Table 1-1.

### OPERATIONAL MEASUREMENTS

Operational measurements are defined as those measurements which will remain fixed for a block of vehicles fulfilling a similar type of mission. They comprise the first three categories as follows:

#### In-Flight Management of the Spacecraft (Category I)

These measurements must be presented to the astronaut on a real-time basis (display). They measure the status of vital consumable items, provide essential spacecraft performance information, indicate proper sequencing of critical operations, provide information essential for safety of the crew, etc.

#### Mission Evaluation and System Performance (Category II)

These measurements are required for ground monitoring of spacecraft performance for flight operations purposes. They are either displayed at the MSFN stations or are capable of being displayed in real time on command. The measurements may be used as an aid in the spacecraft management from the ground by use of voice or command links.

#### Preflight Checkout of the Spacecraft (Category III)

These measurements are required for checkout of the spacecraft to ensure proper system operation and flight readiness.

### FLIGHT QUALIFICATION MEASUREMENTS (CATEGORY IV)

Flight qualification measurements comprise the fourth category and are defined as those measurements which will vary from flight to flight, depending upon mission objectives and state of development of the hardware. These measurements are required for satisfaction of test objectives relating to qualification and verification of engineering design and analysis of the spacecraft and its subsystems. The data obtained from these measurements will be used for postflight evaluation and analysis only.



Table 1-1. Apollo Spacecraft Measurement Classifications

Class	Category	Primary Usage
FIXED REQUIREMENTS		
Operational	I	Spacecraft management
	II	Spacecraft performance mission evaluation
	III	Preflight ground checkout
VARIABLE REQUIREMENTS		
Flight qualification	IV	System qualification and verification of analysis



## II. MEASUREMENT SCHEMATICS

Command module structure is illustrated in Figures 2-1 through 2-4.  
Measurement locations are shown in Figures 2-5 through 2-49.

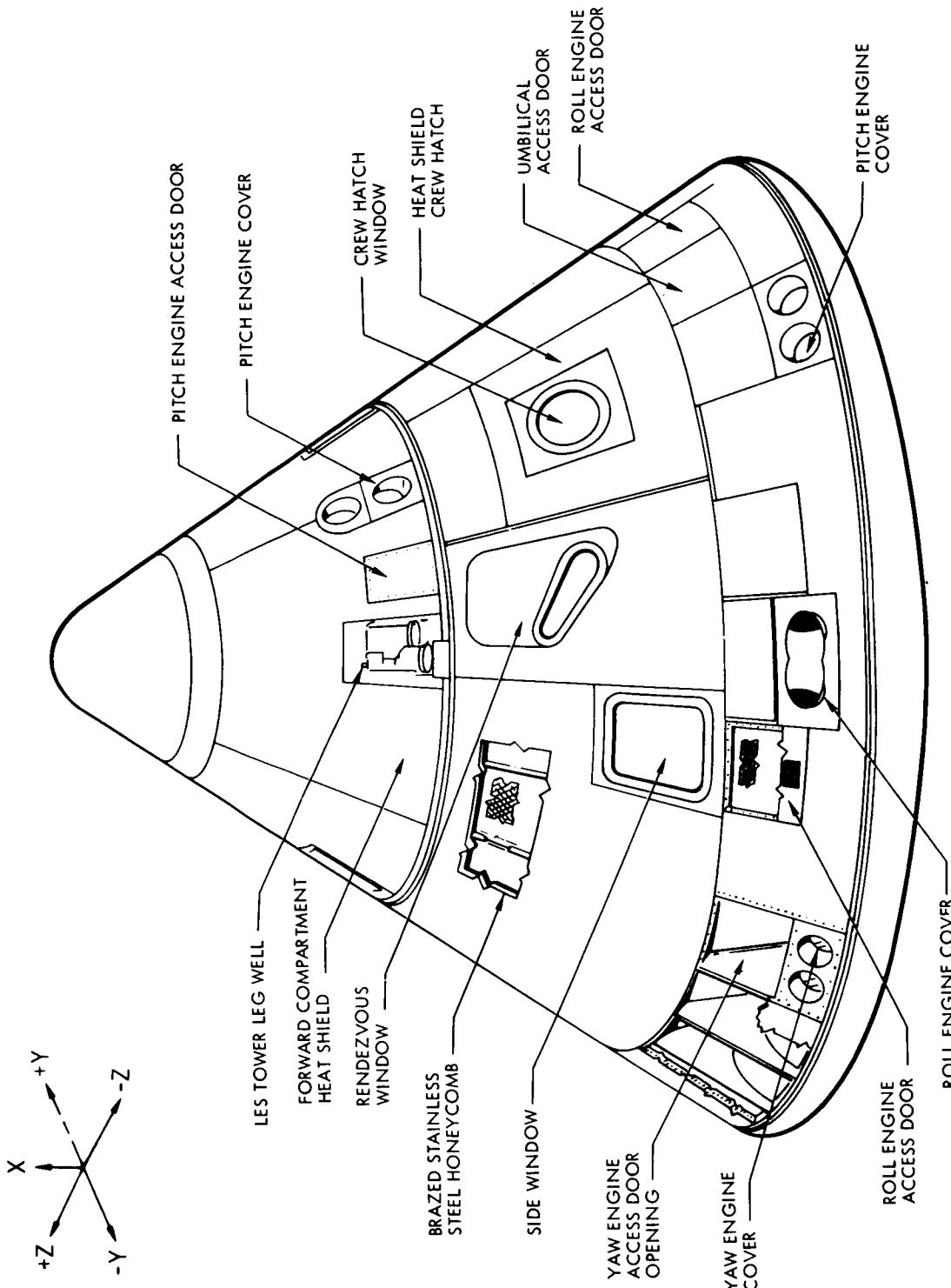


Figure 2-1. Command Module Outer Structure (Heat Shield)

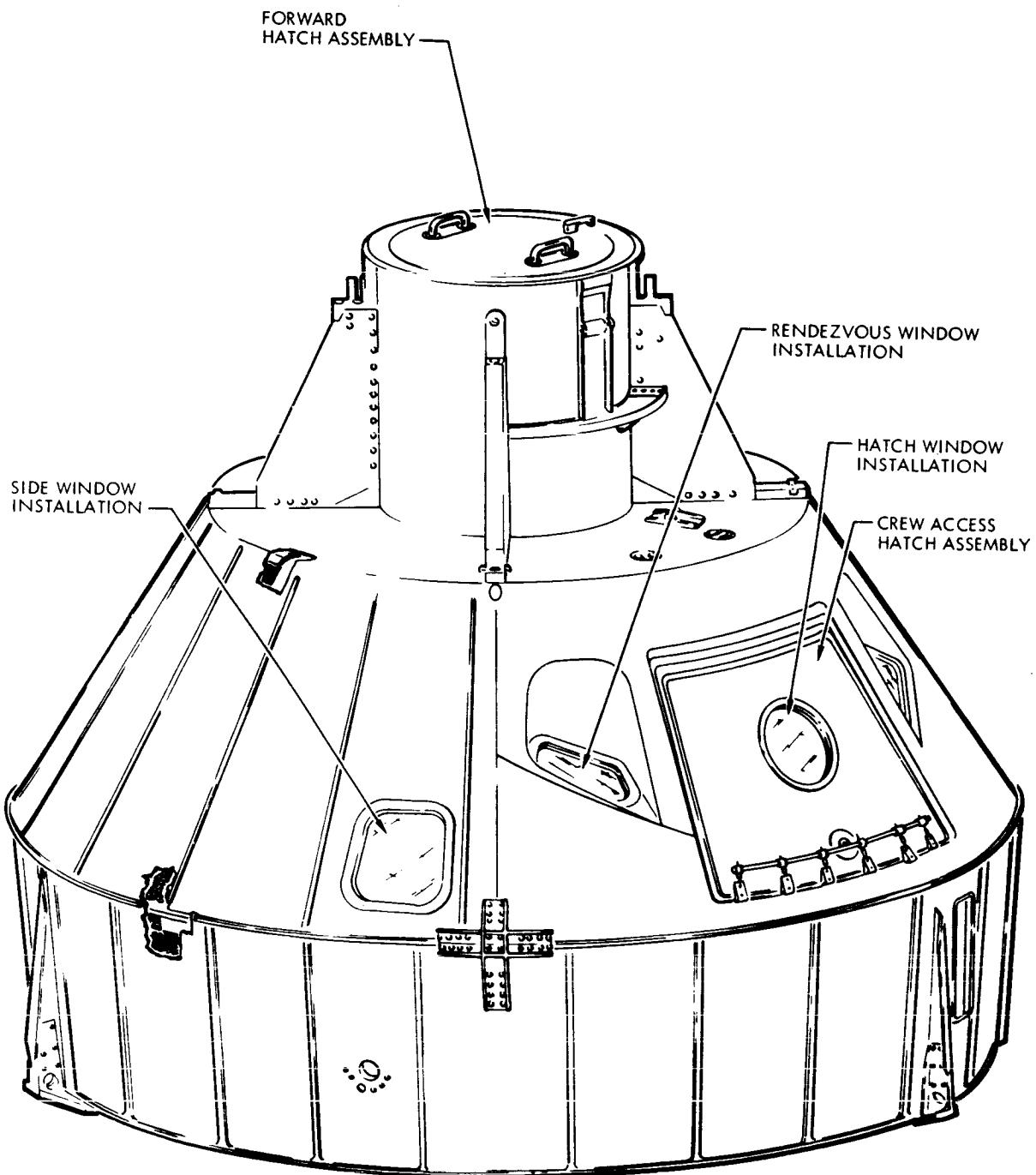


Figure 2-2. Command Module Pressure Hull

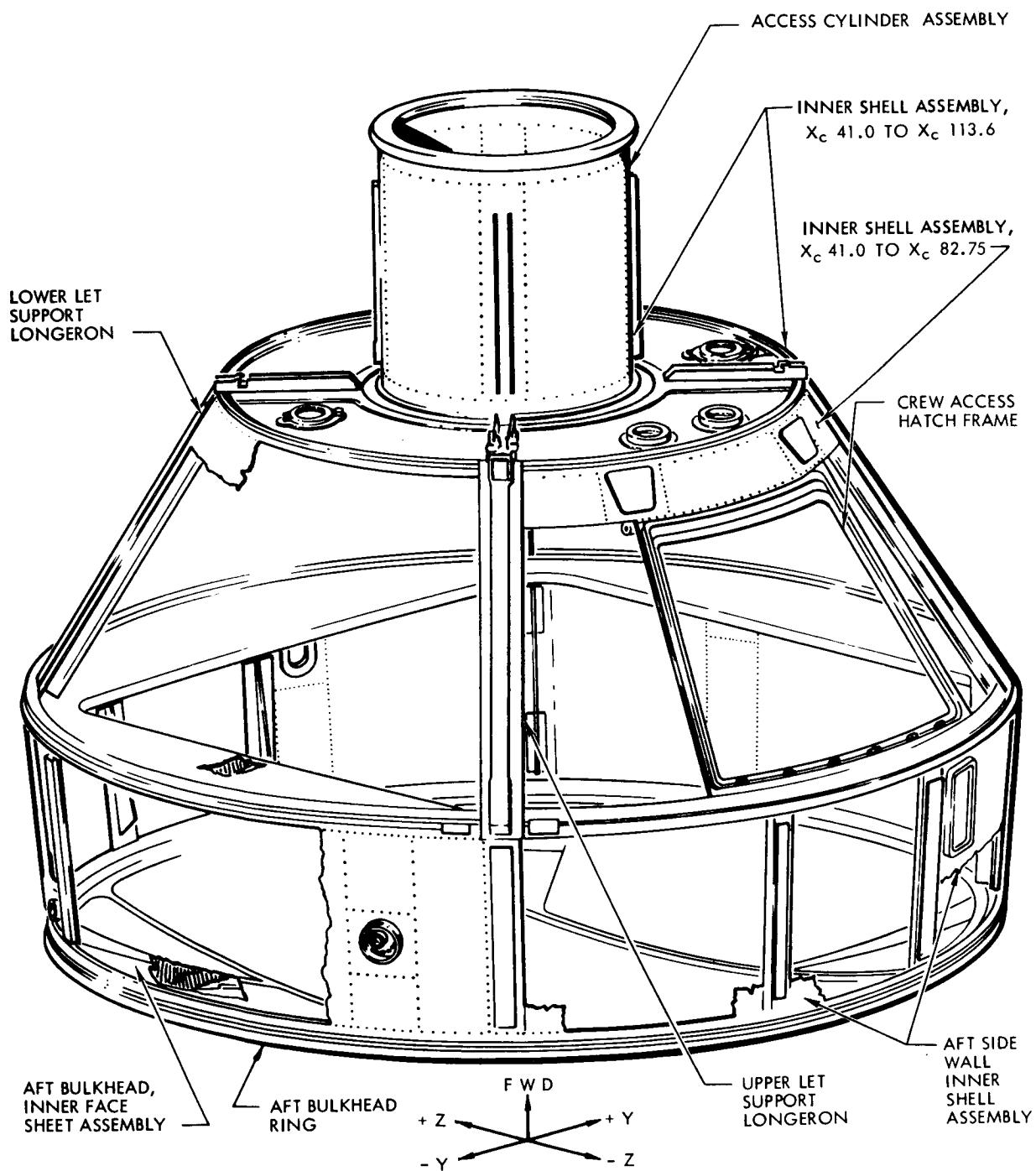


Figure 2-3. Command Module Inner Structure (Longeron Arrangement)

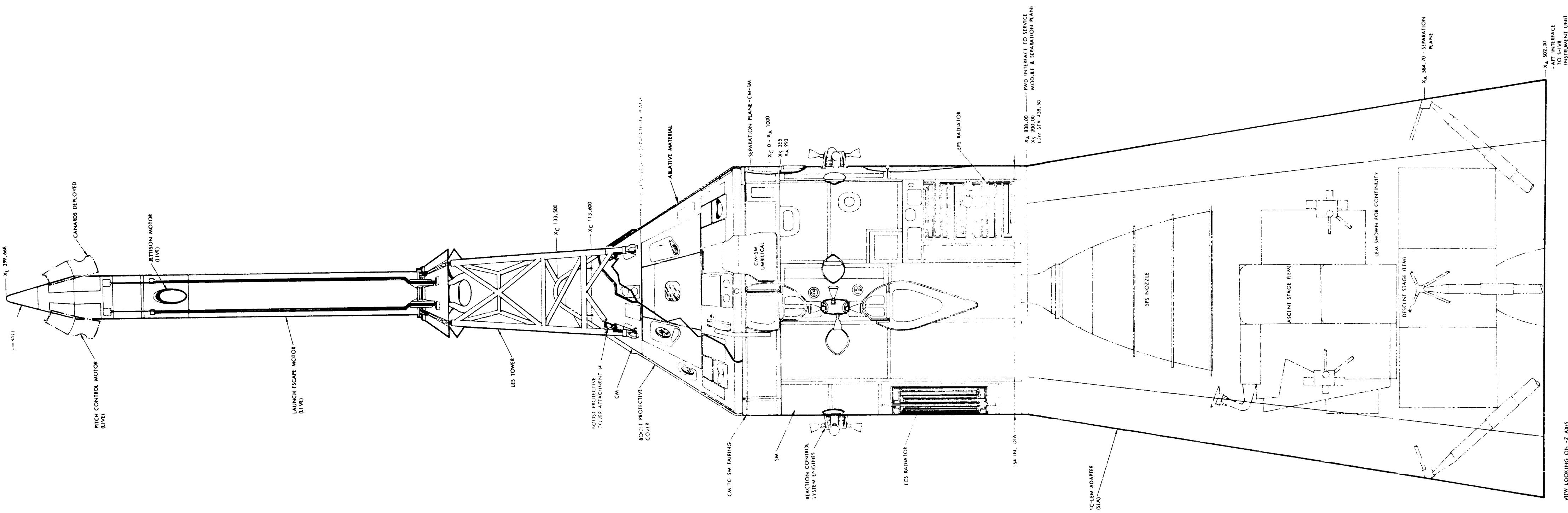


Figure 2-4. Flight Configuration



### III. REQUIREMENT SUMMARY

#### FLIGHT MEASUREMENTS

The flight measurement summary for Spacecraft 017/020 is presented in Table 3-1. All operational and flight qualification measurements telemetered or displayed during the flight are included. The following columns are used in this table:

1. Subsystem. The spacecraft subsystem for which the measurement totals are presented.
2. Operational Measurements
  - a. PCM. The number of analog, event, and digital PCM operational measurements
  - b. Display. The number of display measurements:
  - c. Total. The total number of operational flight measurements telemetered or displayed during flight
3. Flight Qualification Measurements
  - a. PCM. The number of flight qualification measurements loaded on PCM as analog or event functions
  - b. Tape Recorder. The number of flight qualification measurements loaded on either the operational or flight qualification tape recorder
  - c. Total. The total number of flight qualification measurements
4. Subsystem total. The number of flight measurements for each subsystem.



Table 3-1. Flight Measurement Summary

Subsystem	Operational						Flight Qualification						Sub-System Total	
	PCM			PCM			PCM			Tape Recorder				
	Analog	Event	Digital	Display	Total	Analog	Event	Total	Analog	Event	Total	Analog		
Structures (A)	9	0	0	0	9	12	0	263	275	284	0	0		
Electrical power (C)	60	10	0	63	74	0	0	0	0	0	0	0	74	
Master event sequence controller (D)	4	35	0	0	39	0	0	0	0	0	0	0	39	
Earth landing sequence controller (E)	1	8	0	0	9	0	0	0	0	0	0	0	9	
Environmental control (F)	24	0	0	1	24	7	0	2	9	33	0	0		
Guidance and navigation (G)	32	23	1	43	80	0	0	0	0	0	0	0	80	
Stabilization and control (H)	25	27	0	20	64	0	0	0	0	0	0	0	64	
Crew Equipment (J)	0	0	0	0	0	0	0	0	0	0	0	0	0	
Flight technology (K) *	3	0	0	0	3	0	0	0	0	0	0	0	3	
Service propulsion (P)	19	0	0	5	21	0	0	7	7	7	28	0		
Reaction control (R)	26	0	0	34	40	4	0	18	22	62	0	0		
Launch vehicle emergency detection (S)	3	16	0	20	28	0	0	0	0	0	28	0		
Communications and instrumentation (T)	17	4	3	0	24	0	0	0	0	0	0	0	24	
Total	220	123	4	186	412	23	0	290	313	725	0	0		

\*SC 20 only



COMMAND AND SERVICE MODULE MEASUREMENT  
REQUIREMENTS SUMMARY

Table 3-2 contains the CSM total measurement requirements summary. The class codes are defined in the Measurement List Coding Guide and Nomenclature, also in this section.

Table 3-2. Total Measurement Requirements Summary

Class Subsystem	A	B	C	D	E	F	G	H	J	K	P	Q	R	S	T	V	W	X
Structure (A)	8	0	0	15	0	0	3	0	0	4	17	0	46	32	159	0	0	0
Electrical power (C)	0	2	7	0	6	0	0	0	0	0	10	0	6	0	14	32	0	32
Master event sequence controller (D)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	94
Earth landing sequence controller (E)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	34
Environmental control (F)	0	0	0	0	0	0	0	0	0	0	0	26	7	1	0	12	4	0
Guidance and navigation (G)	0	7	14	0	0	0	0	12	0	0	1	0	0	0	6	121	0	71
Stabilization and control (H)	3	3	2	0	0	6	0	26	0	0	0	0	10	0	0	200	0	118
Crew equipment (J)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Flight technology (K)*	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0
Service propulsion (P)	0	0	0	3	0	0	0	6	0	0	30	8	0	0	10	0	0	36
Reaction control (R)	0	0	0	0	0	0	0	0	0	0	130	0	0	0	34	36	0	37
Launch vehicle emergency detection (S)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	27
Communications and instrumentation (T)	0	0	28	0	11	28	0	0	0	0	0	0	0	0	8	150	1	27
Total	11	12	51	18	17	40	3	44	0	4	215	15	63	32	243	570	1	480

\*Note: SC 020 has 2 radiation and 1 temperature measurements not included in the total.  
 This table is for SC 017.



## MINIMUM DATA MODE

Analog measurements for the minimum data mode (PCM+) are summarized in Table 3-3. The maximum capability for analog minimum data mode is 100 high-level measurements at one sample per second and 10 low-level measurements at one sample per second. All digital and event measurements taken on minimum data mode are sampled at one sample per second. Measurement CG000IV, which is normally sampled at 50 samples per second, is sampled on minimum data mode at 10 samples per second.

Table 3-3. Minimum Data Mode Summary (High Level)

Subsystem	One Sample per Second	Ten Samples per Second*	Total
Structures	0	0	0
Electrical power	14	9	23
Environmental control	20	1	21
Guidance and navigation	6	0	6
Stabilization and control	0	11	11
Service propulsion	0	3	3
Reaction control	6	8	14
Communications	0	9	9
Total	46	41	87

\*Ten samples per second when on high bit rate



## GROUND SUPPORT EQUIPMENT AND CHECKOUT MEASUREMENTS

The ground support equipment (GSE) and system checkout measurements are summarized in Table 3-4. All measurements available for testing or checkout are included. The following columns are used in this table:

1. Subsystem. The spacecraft subsystem for which the measurement totals are presented
2. Measurement Points<sup>1</sup>
  - a. Access. The number of access points available on the spacecraft
  - b. Test. The number of test points available on the spacecraft
  - c. Umbilical. The number of measurements available to GSE at the spacecraft umbilicals
  - d. ACE. The number of measurements for which ACE must provide signal conditioning (not including umbilical or PCM points that must also be monitored by ACE)
3. Subsystem Total. The number of GSE and subsystem checkout measurements on the spacecraft

---

<sup>1</sup>See Measurement List Coding Guide and Nomenclature section for definition of measurement points.

Table 3-4. GSE and System Checkout Measurement Summary

Subsystem	Access Points	Test Points	UMB Points	ACE Points	Subsystem Totals
Structures (A)	0	0	0	0	0
Electrical power (C)	28	7	14	24	52
Master event sequence controller (D)	42	8	13	58	73
Earth landing sequence controller (E)	18	0	8	16	26
Environmental control (F)	0	21	0	8	21
Guidance and navigation (G)*	121	0	0	93	154
Stabilization and control (H)	324	0	0	63	330
Crew equipment (J)	0	0	0	0	0
Flight technology (K)	0	0	0	0	0
Service propulsion (P)	0	69	0	42	66
Reaction control (R)	0	209	0	26	209
Launch vehicle emergency detection(S)	0	0	0	0	0
Communications and instrumentation (T)**	215	0	6	14	221
Totals	748	314	41	344	1152

\*The G&N subsystem has four FM measuring points that are not included in this table.

\*\*Communications subsystem has 25 RF measuring points that are not included in this table.



## MEASUREMENT LIST CODING GUIDE AND NOMENCLATURE

The following is a description of the nomenclature and coding used by NAA for Apollo measurement requirements listing.

### MEASUREMENT IDENTIFICATION (MEAS ID)

The measurement identification used on NAA prints, reference drawings, and measurement lists consists of seven characters: two letters followed by four numbers and one letter.

The first letter (module code) designates the measurement location by module.

- A Adapter
- B Booster
- C Command module
- L Launch escape tower
- S Service module

The second letter (functional system code) denotes the subsystem within which the measurement originates.

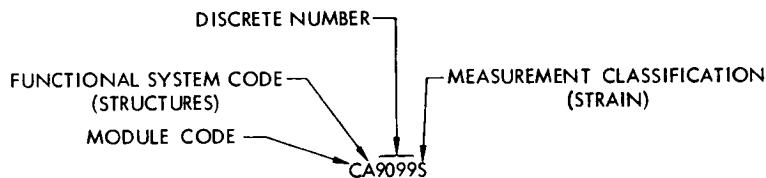
- A Structures
- C Electrical power
- D Master events sequence controller
- E Earth landing sequence controller
- F Environmental control
- G Guidance and navigation
- H Stabilization and control
- J Crew equipment
- K Flight technology
- P Service propulsion
- R Reaction control
- S Launch vehicle emergency detection
- T Communications and instrumentation

Characters three through six are numbers assigned sequentially or grouped for clarity within each system. The seventh character, a letter, denotes measurement classification as follows:



A	Acceleration	N	Camera
B	Phase	P	Pressure
C	Current	Q	Quantity
D	Vibration	R	Rate
E	Power	S	Strain
F	Frequency	T	Temperature
G	Force	V	Voltage
H	Position/Attitude	W	Time
J	Biomedical	X	Discrete event
K	Radiation	Y	Acoustical
L	Velocity	Z	pH (acidity)
M	Mass		

The following sketch shows an example of a measurement number.



## MEASUREMENT DESCRIPTION

The measurement description is a brief, definitive title given to each measurement. Standard abbreviations are used, where applicable, to limit maximum length to 32 characters, including spaces. An abbreviation list is located in Appendix A.

## ACCESSIBILITY

The accessibility heading contains columns which indicate locations or modes whereby measurements may be made available, e.g., TM/TR, displays, or GSE.

### Telemetry/Tape Recorder (TM/ TR)

This column indicates measurements which are telemetered and/or recorded by means of on-board operational and flight qualification tape recorders. The codes used in this column are as follows:

#### Pulse Code Modulation (PCM)

Pulse code modulation is a method of sampling and coding information and of transmitting it as a composite serial signal. The use of the code



PCM in the TM/TR column refers to analog measurements coded into eight-bit words for telemetry.

#### Minimum Data Mode (PCM+)

Flight critical measurements are coded with a PCM+. They will be monitored during the minimum data mode of operation.

#### Pulse Code Modulation Events (PCME)

The pulse code modulation events method is the same as the pulse code modulation method, except that it uses special techniques to monitor events (e.g., on-off and open-close). Only one bit is used.

#### Pulse Code Modulation Digital (PCMD)

Pulse code modulation digital is used for very special types of monitoring requiring extra high accuracy, for grouping associated functions (events), and for monitoring signals already in the digital form.

#### Flight Qualification (FQ)

Flight qualification refers to those measurements required in the flight program to qualify the spacecraft and its subsystems, after which they may no longer be needed. They are not a part of the standard spacecraft design configuration. These measurements may be recorded on board for post-flight evaluation and analysis.

#### Displays (DISP)

These are measurements displayed for the astronauts. Coding designations include M for meter, L for on-off light, S for selectable (single meter or light to monitor more than one function), TB for talkback flag, SM for selectable meter, STB for selectable talkback, and X for a not-yet-defined display. An asterisk (\*) beside a display designation indicates that the function is also presented on the master caution and warning display panel. (Spacecraft 017 and 020 do not contain the caution and warning unit.)

#### Ground Support Equipment (GSE)

The ground support equipment codes appearing in this document (Figure 3-1) are described as follows:

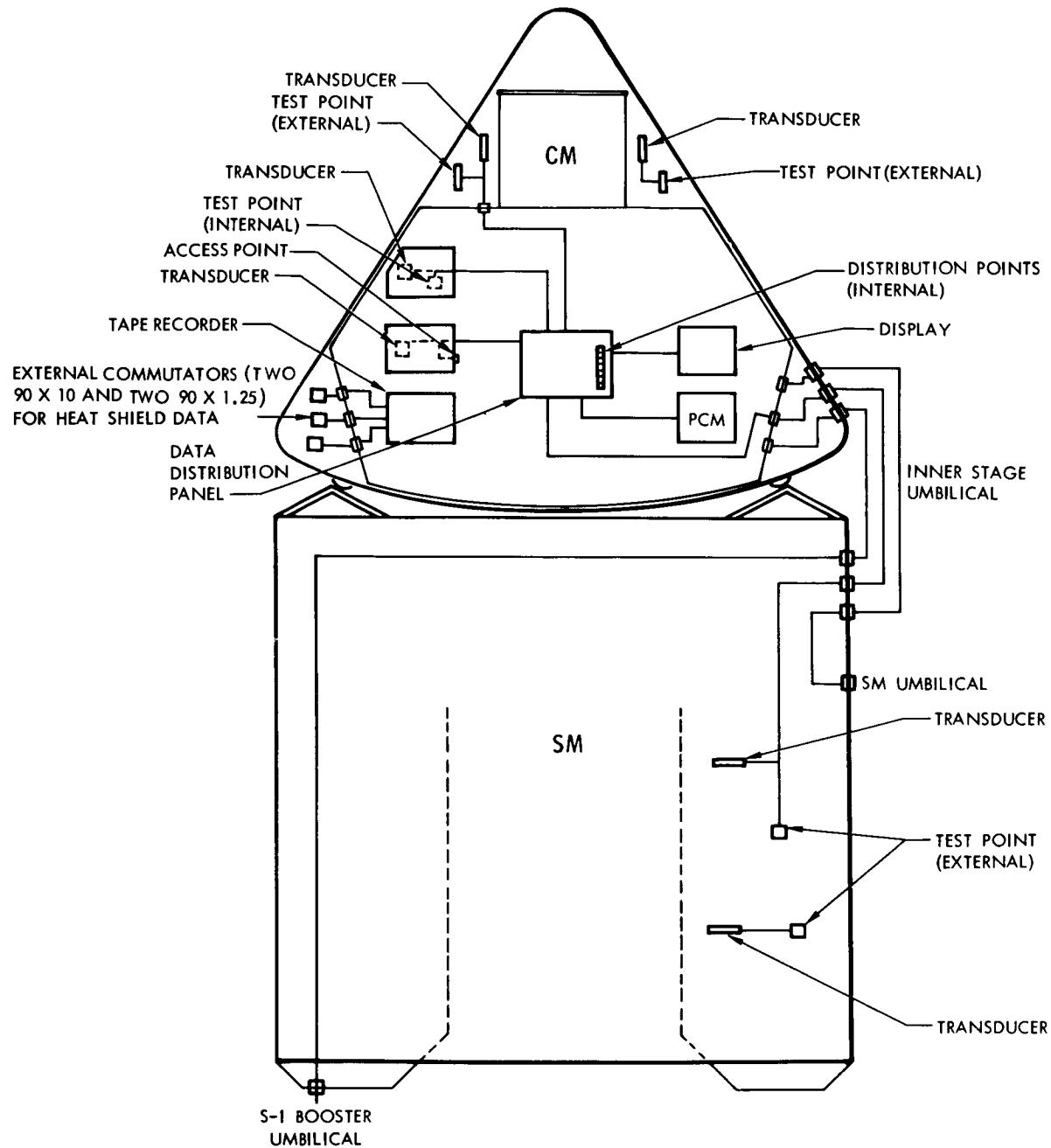


Figure 3-1. General Configuration of Spacecraft Instrumentation



### Access Points (A) and Access Points, GSE (AG)

Access points are points in the command module that are physically accessible to the astronaut during flight. These points may be on the panel of the equipment involved or on a separate panel for remote pickups. Normally, the only wiring required for an access point will be a tee from the main instrumentation wire to the front panel of the equipment. If the measurement is not in this category, then special wiring must be provided from the pickup point to the access plug. Access point signals need not be signal conditioned. Access points that are monitored by GSE auxiliary equipment are designated as AG's or PG's.

### Test Points (T)

Test points are points in the spacecraft systems that may be used by ground support equipment for checkout. These points may be either electrical or physical (pressure) points. They need not be signal conditioned. Electrical test points from a particular system will be brought to a common panel in order to provide availability in the vertically mated configuration. These test points are not accessible after closeout in preparation for a flight.

### Acceptance Checkout Equipment (P)

Acceptance checkout equipment (ACE) will be used for acceptance, system, combined systems, and integrated systems tests. ACE will be used to sample measurements designated by AP, TP, or P in the GSE column. ACE will also monitor all data on PCM.

### Acceptance Checkout Equipment (U)

On flight vehicles, measurements through the GSE umbilicals will be used to determine final preflight status. USM denotes the umbilical from the service module, and USI the umbilical from the Saturn I booster.

### Radio Frequency (RF) and Frequency Modulation (FM)

RF measurements are required to check out the RF link. They need not be hardwired. FM measurements are hardlined to the scope display on GSE.

### MEASUREMENT SOURCE ( $\frac{M}{S}$ )

The measurement source column is not used.

CATEGORY ( $\frac{C}{Y}$ )

Numbers 1 through 4 in this column indicate the category of the measurement. See Table 1-1 for category definitions.

PRIORITY ( $\frac{P}{R}$ )

The priority column is not used.

MANNED SPACE FLIGHT NETWORK ( $\frac{F}{O}$ )

An x under this column, flight operations ( $\frac{F}{O}$ ), indicates that the measurement is displayed to the MSFN stations. These measurements provide the MSFN stations with information on spacecraft performance.

## RESPONSE

The response is the minimum interrogation rate necessary to reproduce data with sufficient detail to satisfy the measurement requirement. Response rate is indicated in this column as samples per second (S/S), cycles per second (CPS), etc. When response rate is given as two numbers, for example, 10/1, the first figure indicates the PCM sampling rate (see TM/TR column). The second figure indicates the ACE sampling rate (see GSE column). Whenever an asterisk (\*) appears beside a response rate, it indicates a requirement for ACE to provide capability for a 400 S/S sampling.

## DATA RANGE

The data range denotes the required instrumentation range (upper and lower limits) of the measurement. No data are required beyond these limits.

Low

The low column indicates the minimum limit.

High

The high column designates the maximum limit.



### Units

The units column denotes the engineering units of the data monitored. Appropriate abbreviations are used.

### LOCATION/REMARKS

The location/remarks column may be used to present supplementary information or to denote the physical location within the spacecraft where the measurement is taken. The location is given in word description, linear coordinates, or in linear and polar coordinates. Most measurement locations are given by distance along the X axis, an angle about the X axis, and a radial distance measured from the X axis, e.g.,  $X_C$  42, 40 degrees, R51.9. All angular dimensions are referenced with the +Y axis as 0 degrees and the +Z axis as 90 degrees. Linear distances are in inches; angles are in degrees. Figure 3-2 shows the coordinate orientation.

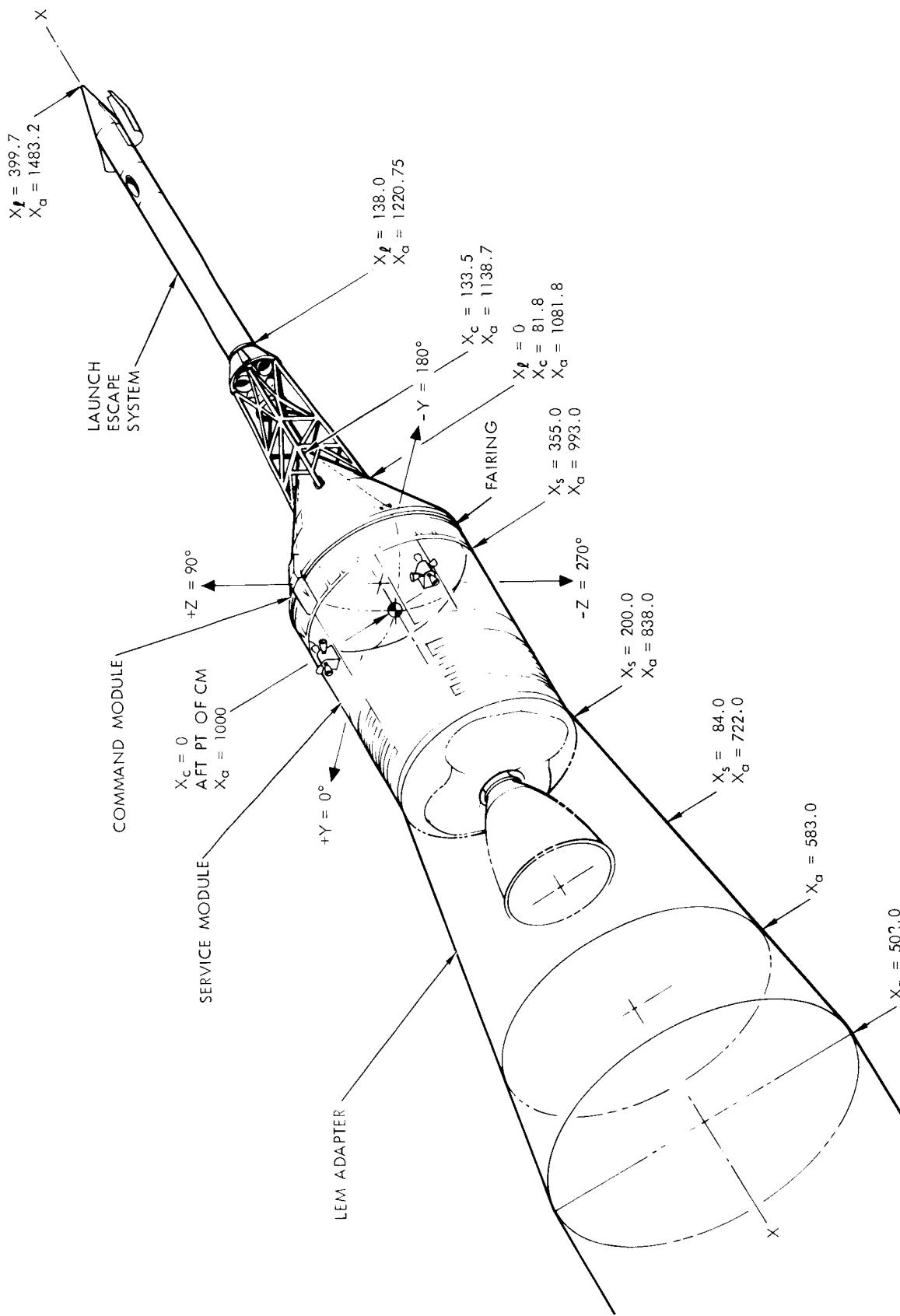


Figure 3 -2. Apollo Spacecraft Integrated Stations and Axes



## IV. TOTAL MEASUREMENT REQUIREMENT LIST

### MEASUREMENT CHANGE RECORD

The changes included in this revision since the last issue dated 1 February 1966 were due to the following MCR actions: A-979, A-1012, A-1027, A-1043, A-1205, A-1210, A-1214, A-1254, A-1256, A-1293, A-1321, A-1328, A-1367, A-1376, A-1377, A-1402, A-1436, A-1474, A-1479, A-1491, A-1497, A-1542, A-1590, A-1592, A-1604, A-1615, A-1633, and A-1634.



SC 17/20 MEASUREMENT CHANGE RECORD

MEAS ID	CHANGE DESCRIPTION	MCR NO	SCN NO
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STRUCTURES

SA2021G	ADDED MEAS	A-1604	48
SA2022G	ADDED MEAS	A-1604	48
CA5071R	DELETED MEAS	A-1479	36
CA5640R	DELETED MEAS	A-1479	36
CA5641R	DELETED MEAS	A-1479	36
CA5642R	DELETED MEAS	A-1479	36
CA5644R	DELETED MEAS	A-1479	36
CA5811T	ADDED MEAS	A-1491	
CA5812T	ADDED MEAS	A-1491	
CA5813T	ADDED MEAS	A-1491	
CA5814T	ADDED MEAS	A-1491	
CA5815T	ADDED MEAS	A-1491	
CA5816T	ADDED MEAS	A-1491	
CA5817T	ADDED MEAS	A-1491	
CA5818T	ADDED MEAS	A-1491	
AA7860T	CHANGED LOCATION	A-1604	48
AA7869T	CHANGED LOCATION	A-1604	48
AA7870T	CHANGED LOCATION	A-1604	48
AA7871T	CHANGED LOCATION	A-1604	48
AA7874T	CHANGED LOCATION	A-1604	48

ELECTRICAL

CC0175T	DELETED DISPLAY	A-979	10
CC0176T	DELETED DISPLAY	A-979	10
CC0177T	DELETED DISPLAY	A-979	10
CC0208V	DELETED MEAS	A-1012	4
CC0209V	ADDED ACE	A-1210	8
CC0233X	DELETED DISPLAY	A-979	10
CC0234X	DELETED DISPLAY	A-979	10
CC0236X	DELETED DISPLAY	A-979	10
CC0237X	DELETED DISPLAY	A-979	10
CC0236X	ADDED TO ACE	A-1634	51
CC0237X	ADDED TO ACE	A-1634	51
CC0242X	ADDED TO ACE	A-1634	51
CC0243X	ADDED TO ACE	A-1634	51



## SC 17/20 MEASUREMENT CHANGE RECORD

MEAS ID	CHANGE DESCRIPTION	MCR NO	SCN NO
SC2060P	DELETED DISPLAY AND C/W	A-979	10
SC2061P	DELETED DISPLAY AND C/W	A-979	10
SC2062P	DELETED DISPLAY AND C/W	A-979	10
SC2066P	DELETED DISPLAY AND C/W	A-979	10
SC2067P	DELETED DISPLAY AND C/W	A-979	10
SC2068P	DELETED DISPLAY AND C/W	A-979	10
SC2069P	DELETED DISPLAY AND C/W	A-979	10
SC2070P	DELETED DISPLAY AND C/W	A-979	10
SC2071P	DELETED DISPLAY AND C/W	A-979	10
SC2081T	DELETED C/W	A-979	10
SC2081T	DELETED ACE FOR CRYO FAC	A-1592	
SC2082T	DELETED C/W	A-979	10
SC2082T	DELETED ACE FOR CRYO FAC	A-1592	
SC2083T	DELETED C/W	A-979	10
SC2083T	DELETED ACE FOR CRYO FAC	A-1592	
SC2084T	DELETED C/W	A-979	10
SC2084T	DELETED ACE FOR CRYO FAC	A-1592	
SC2085T	DELETED C/W	A-979	10
SC2085T	DELETED ACE FOR CRYO FAC	A-1592	
SC2086T	DELETED C/W	A-979	10
SC2086T	DELETED ACE FOR CRYO FAC	A-1592	
SC2087T	DELETED DISPLAY AND C/W	A-979	10
SC2088T	DELETED DISPLAY AND C/W	A-979	10
SC2089T	DELETED DISPLAY AND C/W	A-979	10
SC2113C	DELETED ACE FROM CRYO FAC	A-1592	
SC2114C	DELETED ACE FROM CRYO FAC	A-1592	
SC2115C	DELETED ACE FROM CRYO FAC	A-1592	
SC2120X	DELETED C/W	A-979	10
SC2120X	DELETED ACE FROM CRYO FAC	A-1592	
SC2121X	DELETED C/W	A-979	10
SC2121X	DELETED ACE FROM CRYO FAC	A-1592	
SC2122X	DELETED C/W	A-979	10
SC2122X	DELETED ACE FROM CRYO FAC	A-1592	
SC2125X	DELETED C/W	A-979	10
SC2125X	DELETED ACE FROM CRYO FAC	A-1592	
SC2126X	DELETED C/W	A-979	10
SC2126X	DELETED ACE FROM CRYO FAC	A-1592	
SC2127X	DELETED C/W	A-979	10



## SC 17/20 MEASUREMENT CHANGE RECORD

MFAS ID	CHANGE DESCRIPTION	MCR NO	SCN NO
SC2127X	DELETED ACE FROM CRYO FAC	A-1592	
SC2139R	DELETED C/W	A-979	10
SC2140R	DELETED C/W	A-979	10
SC2141R	DELETED C/W	A-979	10
SC2141R	DELETED C/W	A-979	10
SC2142R	DELETED C/W	A-979	10
SC2143R	DELETED C/W	A-979	10
SC2144R	DELETED C/W	A-979	10
SC2160X	DELETED C/W	A-979	10
SC2161X	DELETED C/W	A-979	10
SC2162X	DELETED C/W	A-979	10
SC2323X	DELETED ACE FOR CRYO FAC	A-1592	
SC2324X	DELETED ACE FOR CRYO FAC	A-1592	
SC2325X	DELETED ACE FOR CRYO FAC	A-1592	
SC2326X	ADDED FOR USM	A-1542	
SC2327X	ADDED FOR USM	A-1542	
SC2328X	ADDED FOR USM	A-1542	
CC2401X	ADDED FOR USM	A-1402	16
CC2402X	ADDED FOR USM	A-1402	16
CC2402X	ADDED FOR USM	A-1402	16
CC2403X	ADDED FOR USM	A-1402	16

## MASTER EVENTS SEQUENCE CONTROLLER

CD0060X	DELETED MEAS	A-1367	21
CD0061X	DELETED MEAS	A-1367	21
CD0644X	ADDED ACE	A-1027	18
CD0645X	ADDED ACE	A-1027	18
CD0646X	ADDED ACE	A-1027	18
CD0647X	ADDED ACF	A-1027	18
CE0035P	DELETED M DISPLAY	A-979	10

## ENVIRONMENTAL CONTROL

CF0001P	DELETED DISPLAY	A-979	10
CF0002T	DELETED DISPLAY	A-979	10
CF0006P	DELETED DISPLAY	A-979	10
CF0008T	DELETED MEAS	A-979	10



## SC 17/20 MEASUREMENT CHANGE RECORD

MEAS ID	CHANGE DESCRIPTION	MCR NO	SCN NO
CF00090	DELETED DISPLAY	A-979	10
CF00100	DELETED DISPLAY	A-979	10
CF0012P	DELETED MEAS	A-979	10
CF0015P	DELETED MEAS	A-979	10
CF0016P	DELETED DISPLAY	A-979	10
CF0018T	DELETED DISPLAY	A-979	10
CF00190	DELETED DISPLAY	A-979	10
CF0020T	DELETED MEAS	A-979	10
CF0030Q	DELETED DISPLAY	A-979	10
CF0031Q	DELETED DISPLAY	A-979	10
CF0032Q	DELETED DISPLAY	A-979	10
CF0033Q	DELETED DISPLAY	A-979	10
CF0035R	DELETED DISPLAY	A-979	10
CF0037R	DELETED DISPLAY	A-979	10
CF0038R	DELETED DISPLAY	A-979	10
CF0039R	DELETED DISPLAY	A-979	10
CF0040R	DELETED DISPLAY	A-979	10
CF0105F	DELETED MEAS	A-979	10
CF0148P	DELETED MEAS	A-979	10
CF0153T	DELETED MEAS	A-979	10
CF0197X	DELETED MEAS	A-979	10

## GUIDANCE AND NAVIGATION

CG2107V	REVISED DATA RANGE	A-1321	32
CG2137V	REVISED DATA RANGE	A-1321	32
CG2167V	REVISED DATA RANGE	A-1321	32
CG3131V	ADDED ACE MFAS	A-1474	37
CG3401V	DELETED MEAS	A-1293	
CG3404V	DELETED MEAS	A-1293	
CG3405V	DELETED MEAS	A-1293	
CG3410V	DELETED MEAS	A-1293	
CG5000X	DELETED C/W	A-979	10
CG5001X	DELETED C/W	A-979	10
CG5002X	DELETED C/W	A-979	10
CG5003X	DELETED C/W	A-979	10
CG5005X	DELETED C/W	A-979	10
CG5006X	DELETED C/W	A-979	10



## SC 17/20 MEASUREMENT CHANGE RECORD

MEAS ID	CHANGE DESCRIPTION	MCR NO	SCN NO
CG5030X	DELETED C/W	A-979	10

## STABILIZATION AND CONTROL

CH0020H	REVISED DATA RANGE	A-1590	44
CH0024R	REVISED DATA RANGE	A-1590	44
CH0025V	REVISED DATA RANGE	A-1590	44
CH0026V	ADDED ACE MEAS	A-1328	5
CH0026V	REVISED DATA RANGE	A-1377	38
CH0026H	REVISED DATA RANGE	A-1590	44
CH0027V	ADDED ACE MEAS	A-1328	5
CH0027R	REVISED DATA RANGE	A-1590	44
CH0028V	DELETED MEAS	A-1328	5
CH0029V	ADDED ACE MEAS	A-1328	5
CH0029H	REVISED DATA RANGE	A-1590	44
CH0030H	DELETED MEAS	A-1328	5
CH0031H	DELETED MEAS	A-1328	5
CH0032V	DELETED MEAS	A-1328	5
CH0033V	ADDED ACE MEAS	A-1328	5
CH0033V	REVISED DATA RANGE	A-1590	44
CH0034H	REVISED DATA RANGE	A-1590	44
CH0036V	ADDED ACE MEAS	A-1377	38
CH0036V	REVISED DATA RANGE	A-1590	44
CH0037V	ADDED ACE MEAS	A-1377	38
CH0037V	REVISED DATA RANGE	A-1590	44
CH0038V	ADDED ACE MEAS	A-1377	38
CH0038V	REVISED DATA RANGE	A-1590	44
CH0040V	ADDED ACE MEAS	A-1377	38
CH0040V	REVISED DATA RANGE	A-1590	44
CH0041V	ADDED ACE MEAS	A-1377	38
CH0041V	REVISED DATA RANGE	A-1590	44
CH0045V	REVISED DATA RANGE	A-1590	44
CH0047C	REVISED DATA RANGE	A-1590	44
CH0050R	ADDED TO PCM	A-1633	52
CH0053V	REVISED DATA RANGE	A-1590	44
CH0076V	REVISED DATA RANGE	A-1590	44
CH0628V	DELETED ACE	A-1214	9
CH0632V	DELETED ACE	A-1214	9



## SC 17/20 MEASUREMENT CHANGE RECORD

MEAS ID	CHANGE DESCRIPTION	MCR NO	SCN NO
CH1020H	REVISED DATA RANGE	A-1590	44
CH1024R	REVISED DATA RANGE	A-1590	44
CH1025V	REVISED DATA RANGE	A-1590	44
CH1026V	ADDED ACE MEAS	A-1328	5
CH1026H	REVISED DATA RANGE	A-1590	44
CH1027V	ADDED ACE MEAS	A-1328	5
CH1027R	REVISED DATA RANGE	A-1590	44
CH1028V	DELETED MEAS	A-1328	5
CH1029V	ADDED ACE MEAS	A-1328	5
CH1029H	REVISED DATA RANGE	A-1590	44
CH1033V	ADDED ACE MEAS	A-1328	5
CH1033V	REVISED DATA RANGE	A-1590	44
CH1030H	DELETED MEAS	A-1328	5
CH1034H	REVISED DATA RANGE	A-1590	44
CH1031H	DELETED MEAS	A-1328	5
CH1032H	DELETED MEAS	A-1328	5
CH1032V	DELETED MEAS	A-1328	5
CH1036V	ADDED ACE MEAS	A-1377	38
CH1036V	REVISED DATA RANGE	A-1590	44
CH1037V	ADDED ACE MEAS	A-1377	38
CH1037V	REVISED DATA RANGE	A-1590	44
CH1038V	ADDED ACE MEAS	A-1377	38
CH1038V	REVISED DATA RANGE	A-1590	44
CH1040V	ADDED ACE MEAS	A-1377	38
CH1040V	REVISED DATA RANGE	A-1590	44
CH1041V	ADDED ACE MEAS	A-1377	38
CH1041V	REVISED DATA RANGE	A-1590	44
CH1045V	REVISED DATA RANGE	A-1590	44
CH1047C	REVISED DATA RANGE	A-1590	44
CH1050R	ADDED TO PCM	A-1633	52
CH1053V	REVISED DATA RANGE	A-1590	44
CH1076V	REVISED DATA RANGE	A-1590	44
CH1628V	DELETED ACE	A-1214	9
CH1632V	DELETED ACE	A-1214	9
CH2020H	REVISED DATA RANGE	A-1590	44
CH2024R	REVISED DATA RANGE	A-1590	44
CH2025V	REVISED DATA RANGE	A-1590	44
CH2045V	REVISED DATA RANGE	A-1590	44



## SC 17/20 MEASUREMENT CHANGE RECORD

MEAS ID	CHANGE DESCRIPTION	MCR NO	SCN NO
CH2050R	ADDED TO PCM	A-1633	52
CH2076V	REVISED DATA RANGE	A-1590	44
CH3170V	DELETED MEAS	A-1214	9
CH3171V	DELETED MEAS	A-1214	9
CH3178V	REVISED DATA RANGE	A-1590	44
CH3207X	DELETED MEAS	A-1214	9
CH3271H	REVISED DATA RANGE	A-1590	44
CH3272H	REVISED DATA RANGF	A-1590	44

## FLIGHT TECHNOLOGY

## SC 20 ONLY

CK1051K	ADDED MEAS	A-1497	40
CK1052K	ADDED MEAS	A-1497	40
CK1053T	ADDED MEAS	A-1497	40

## SERVICE PROPULSION

SP0001P	DELETED DISPLAY	A-979	10
SP0001P	DELETED ACE FOR PAD 16	A-1592	
SP0002T	DELETED DISPLAY	A-979	10
SP0002T	DELETED ACE FOR PAD 16	A-1592	
SP0003P	DELETED C/W	A-979	10
SP0003P	DELETED ACE FOR PAD 16	A-1592	
SP0006P	DELETED C/W	A-979	10
SP0006P	DELETED ACE FOR PAD 16	A-1592	
SP0009P	DELETED C/W	A-979	10
SP0010P	DELETED DISPLAY	A-979	10
SP0010P	DELETED ACE FOR PAD 16	A-1592	
SP0011D	DELETED MEAS	A-979	10
SP0012D	DELETED MEAS	A-979	10
SP0020T	DELETED DISPLAY AND C/W	A-979	10
SP0022H	DELETED ACE FOR PAD 16	A-1592	
SP0023H	DELETED ACE FOR PAD 16	A-1592	
SP0024H	DELETED ACE FOR PAD 16	A-1592	
SP0025H	DELETED ACE FOR PAD 16	A-1592	
SP0026H	DELETED MEAS	A-979	10
SP0027H	DELETED MEAS	A-979	10



## SC 17/20 MEASUREMENT CHANGE RECORD

MEAS ID	CHANGE DESCRIPTION	MCR NO	SCN NO
SP0028H	DELETED MEAS	A-979	10
SP0029H	DELETED MEAS	A-979	10
SP0046H	DELETED DISPLAY	A-979	10
SP0046H	DELETED ACE FOR PAD 16	A-1592	
SP0047H	DELETED DISPLAY	A-979	10
SP0047H	DELETED ACE FOR PAD 16	A-1592	
SP0600P	DELETED DISPLAY	A-979	10
SP0600P	DELETED ACE FOR PAD 16	A-1592	
SP0600P	DELETED ACE FOR PAD 16	A-1592	
SP0601P	DELETED DISPLAY	A-979	10
SP0601P	DELETED ACE FOR PAD 16	A-1592	
SP0640Q	DELETED MEAS	A-979	10
SP0656Q	ADDED ACE MEAS	A-1256	6
SP0656Q	DELETED ACE FOR PAD 16	A-1592	
SP0658Q	ADDED ACE MEAS	A-1256	6
SP0658Q	DELETED ACE FOR PAD 16	A-1592	
SP0661P	DELETED ACE FOR PAD 16	A-1592	
SP1000X	DELETED DISPLAY AND C/W	A-979	10
SP1000X	DELETED ACE FOR PAD 16	A-1592	
SP1001X	DELETED DISPLAY AND C/W	A-979	10
SP1001X	DELETED ACE FOR PAD 16	A-1592	
SP1002X	DELETED DISPLAY AND C/W	A-979	10
SP1002X	DELETED ACE FOR PAD 16	A-1592	
SP1030D	ADDED GSE MEAS	A-1254	11
SP1032D	ADDED GSE MFAS	A-1254	11
SP1033D	ADDED GSE MEAS	A-1254	11
SP3100X	ADDED ACE MEAS	A-1256	6
SP3101X	ADDED ACE MEAS	A-1256	6
SP3102X	ADDED ACE MEAS	A-1256	6
SP3103X	ADDED ACE MEAS	A-1256	6
SP3104X	ADDED ACE MEAS	A-1256	6
SP3105X	ADDED ACE MEAS	A-1256	6
SP3106X	ADDED ACE MEAS	A-1256	6
SP3107X	ADDED ACE MEAS	A-1256	6
SP3108X	ADDED ACE MEAS	A-1256	6
SP3110X	ADDED ACE MEAS	A-1256	6
SP3111X	ADDED ACE MEAS	A-1256	6
SP3112X	ADDED ACE MEAS	A-1256	6



## SC 17/20 MEASUREMENT CHANGE RECORD

MFAS ID	CHANGE DESCRIPTION	MCR NO	SCN NO
SP3113X	ADDED ACE MEAS	A-1256	6
SP3114X	ADDFD ACE MEAS	A-1256	6
SP3115X	ADDED ACE MEAS	A-1256	6
SP3116X	ADDEC ACE MEAS	A-1256	6
SP3117X	ADDFD ACE MEAS	A-1256	6
SP3118X	ADDED ACE MEAS	A-1256	6
SP3119X	ADDED ACE MEAS	A-1256	6
SP3120X	ADDED ACF MEAS	A-1256	6
SP3121X	ADDFD ACE MEAS	A-1256	6
SP3122X	ADDED ACE MEAS	A-1256	6
SP3123X	ADDED ACE MEAS	A-1256	6
SP3124X	ADDED ACE MEAS	A-1256	6
SP3125X	ADDFD ACE MEAS	A-1256	6
SP3126X	ADDED ACE MEAS	A-1256	6
SP3127X	ADDED ACE MEAS	A-1256	6
SP3128X	ADDED ACE MEAS	A-1256	6
SP3129X	ADDFD ACE MEAS	A-1256	6
SP3152H	ADDED ACE MEAS	A-1256	6
SP3153H	ADDED ACE MEAS	A-1256	6
SP3158Q	ADDFD ACE MEAS	A-1256	6
SP3159Q	ADDED ACE MEAS	A-1256	6
SP3161Q	ADDED ACE MEAS	A-1256	6
SP3163Q	ADDFD ACE MEAS	A-1256	6

## REACTION CONTROL

CR0005P	DELETED C/W	A-979	10
CR0006P	DELETED C/W	A-979	10
CR0011P	DELETED C/W	A-979	10
CR0012P	DELETED C/W	A-979	10
CR0266X	ADDED ACE	A-1043	33
CR0267X	ADDFD ACE	A-1043	33
CR0268X	ADDED ACE	A-1043	33
CR0269X	ADDED ACE	A-1043	33
CR1034X	DELETED MEAS	A-1615	
CR1035X	DELETED MEAS	A-1615	
CR1036X	DELETED MEAS	A-1615	
CR1037X	DELETED MEAS	A-1615	



## SC 17/20 MEASUREMENT CHANGE RECORD

MFAS ID	CHANGE DESCRIPTION	MCR NO	SCN NO
SR5001P	DELETED ACE FOR PAD 16	A-1592	
SR5002P	DELETED ACE FOR PAD 16	A-1592	
SR5003P	DELETED ACE FOR PAD 16	A-1592	
SR5004P	DELETED ACE FOR PAD 16	A-1592	
SR5055Q	DELETED MEAS	A-1205	26
SR5056Q	DELETED MEAS	A-1205	26
SP5060X	DELETED DISPLAY AND C/W	A-979	10
SR5060X	DELETED TEST POINT	A-1205	26
SR5061X	DELETED DISPLAY AND C/W	A-979	10
SR5061X	DELETED TEST POINT	A-1205	26
SR5062X	DELETED DISPLAY AND C/W	A-979	10
SR5062X	DELETED TEST POINT	A-1205	26
SR5063X	DELETED DISPLAY AND C/W	A-979	10
SR5063X	DELETED TEST POINT	A-1205	26
SR5065T	DELETED C/W	A-979	10
SR5066T	DELETED C/W	A-979	10
SR5067T	DELETED C/W	A-979	10
SR5068T	DELETED C/W	A-979	10
SR5069P	DELETED C/W	A-979	10
SR5076P	DELETED C/W	A-979	10
SR5109X	DELETED MEAS	A-1615	
SR5110X	DELETED MEAS	A-1615	
SR5111X	DELETED MEAS	A-1615	
SR5112X	DELETED MEAS	A-1615	
SR5113X	DELETED MEAS	A-1615	
SR5114X	DELETED MEAS	A-1615	
SR5115X	DELETED MEAS	A-1615	
SR5116X	DELETED MEAS	A-1615	
SR5729P	DELETED ACE FOR PAD 16	A-1592	
SR5776P	DELETED ACE FOR PAD 16	A-1592	
SR5817P	DELETED C/W	A-979	10
SR5817P	DELETED ACE FOR PAD 16	A-1592	
SR5830P	DELETED C/W	A-979	10
SR5830P	DELETED ACE FOR PAD 16	A-1592	

L/V EMERGENCY DETECTION



## SC 17/20 MEASUREMENT CHANGE RECORD

MEAS ID	CHANGE DESCRIPTION	MCR NO	SCN NO
BS0060X	DELETED DISPLAY	A-979	10
BS0061X	DELETED DISPLAY	A-979	10
CS0160X	DELETED MEAS	A-979	10
CS0161X	DELETED MEAS	A-979	10

## COMMUNICATIONS AND INSTRUMENTATION

CT1176V	DELETED MEAS	A-1436	27
CT1190V	DELETED MEAS	A-1436	27
CT0258V	REVISED DATA RANGE	A-1436	27
CT0258T	REVISED DATA RANGE	A-1376	31
CT1227V	REVISED DATA RANGE	A-1376	31



## APOLLO CLOUD BLOCK I MEASUREMENT LIST

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MEAS.	ID	MEASUREMENT DESCRIPTION	TM/IR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						DISP GSE	SYRD	
C A0001	A X AXIS SPACECRAFT ACCEL HIGH	FQ			4	0-30 CPS	-2	+10 G XC78, YC0, ZC21
C A0005	A Y AXIS SPACECRAFT ACCEL	FQ			4	0-30 CPS	-0.5	+0.5 G XC78, YC0, ZC21
C A0007	A Z AXIS SPACECRAFT ACCEL	FQ			4	0-30 CPS	-0.5	+0.5 G XC78, YC0, ZC21
L A0011	A Y AXIS TOWER ACCEL	FQ			4	0-30 CPS	-2.0	+2.0 G XL380, YL0, ZL6
L A0012	A Z AXIS TOWER ACCEL	FQ			4	0-30 CPS	-2.0	+2.0 G XL380, YL6, ZL0
C A0151	A X AXIS ENTRY ACCEL	EQ			4	10 S/S	+0	+20 G X-AXIS NEAR CG
C A0152	A Y AXIS ENTRY ACCEL	FQ			4	10 S/S	+0	+20 G Y-AXIS NEAR CG
C A0153	A Z AXIS ENTRY ACCEL	FQ			4	10 S/S	+0	+20 G Z-AXIS NEAR CG
C A0210	T TEMP TWR LEG WELL WALL 135 DEG	FQ			4	1 S/S	-100	+750 DEG E
C A0211	T TEMP TWR LEG WELL WALL 225 DEG	FQ			4	1 S/S	-100	+750 DEG F
C A0212	T TEMP TWR LEG UMB CON AT 225 DEG	FQ			4	1 S/S	-100	+750 DEG F
C A1401	S STRAIN AX AFT HS OUT Z-Z	EQ			4	10 S/S	-5000	+5000 UI/IN CENTER
C A1402	S STRAIN AX AFT HS IN Z-Z	FQ			4	10 S/S	-5000	+5000 UI/IN CENTER
C A1403	S STRAIN AX AFT HS OUT Y-Y	FQ			4	10 S/S	-5000	+5000 UI/IN CENTER
C A1404	S STRAIN AX AFT HS IN Y-Y	EQ			4	10 S/S	-5000	+5000 UI/IN CENTER
C A1441	T TEMP CM-SW UMB TUBE LOC 1	FQ			4	1 S/S	-100	+2000 DEG F
C A1442	T TEMP CM-SW UMB TUBE LOC 2	FQ			4	1 S/S	-100	+1500 DEG F BLOCK II UMB



## APJ1LOC APOLLO C M / S M B L O C K I M E A S U R E M E N T L I S T VL-01

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MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIONABILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
					DISP	GSE	
C A1443 T TEMP CM-SM UMB TUBE LOC 3	FQ			4	1	S/S	-100 +1000 DEG F BLOCK III UMB
C A1444 T TEMP CM-SM UMB TUBE LOC 4	FQ			4	1	S/S	-100 +1000 DEG F BLOCK III UMB
C A1445 T TEMP CM-SM UMB BRANCH A LOC 1	FQ			4	1	S/S	-100 +2000 DEG F BLOCK III UMB
C A1446 T TEMP CM-SM UMB BRANCH A LOC 2	FQ			4	1	S/S	-100 +2000 DEG F BLOCK III UMB
C A1447 T TEMP CM-SM UMB BRANCH A LOC 3	FQ			4	1	S/S	-100 +1500 DEG F BLOCK III UMB
C A1448 T TEMP CM-SM UMB BRANCH A LOC 4	FQ			4	1	S/S	-100 +1500 DEG F BLOCK III UMB
C A1449 T TEMP CM-SM UMB BRANCH A LOC 5	FQ			4	1	S/S	-100 +1000 DEG F BLOCK III UMB
C A1450 T TEMP CM-SM UMB BRANCH A LOC 6	FQ			4	1	S/S	-100 +1000 DEG F BLOCK III UMB
C A1451 T TEMP CM-SM UMB CONNECTOR LOC A	FQ			4	1	S/S	-100 +750 DEG F BLOCK III UMB
C A1452 T TEMP CM-SM UMB HEAT SINK LOC B	FQ			4	1	S/S	-100 +750 DEG F BLOCK III UMB
C A1453 T TEMP CM-SM UMB SUPT TUBE LOC C	FQ			4	1	S/S	-100 +750 DEG F BLOCK III UMB
C A1454 T TEMP CM-SM UMB BRANCH A LOC Z	FQ			4	1	S/S	-100 +750 DEG F BLOCK III UMB
C A1455 T TEMP CM-SM UMB CON TO IN-STRUCT	FQ			4	1	S/S	-100 +750 DEG F BLOCK III UMB
C A1461 T TEMP AFT HS TENSION TIE BL	FQ			4	1	S/S	-100 +750 DEG F
C A1464 T TEMP CM TENSION TIE BOLT FITTING	FQ			4	1	S/S	-100 +750 DEG F
C A1465 T TEMP CM TENSION TIE BOLT NUT	FQ			4	1	S/S	-100 +750 DEG F
C A1474 T TEMP SHEAR PAD 5-A	FQ			4	1	S/S	+32 +3500 DEG F YC14,ZC-64,,1IN



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MEAS.	MEASUREMENT	DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE
			TMR DISP GSE SYRO	DATA RANGE LOW HIGH UNITS
C A1475 T TEMP SHEAR PAD 5-B	FQ		4 1	S/S +32 +3500 DEG F YC14, ZC-64, +4IN
C A1475 T TEMP SHFAR PAD 5-C	FQ		4 1	S/S +32 +2500 DEG F YC14, ZC-64, +8IN
C A1477 T TEMP SHEAR PAD 5-HL	FQ		4 1	S/S -100 +750 DEG F YC14, ZC-64, BL
C A1478 T TEMP NEAR SHEAR PAD 3	FQ		4 1	S/S -100 +750 DEG F YC-52, ZC27
C A1479 T TEMP NEAR SHEAR PAD 5	FQ		4 1	S/S -100 +750 DEG F YC12, ZC-51
C A1480 T TEMP SHEAR PAD 3 FIBERGLASS BL	FQ		4 1	S/S -100 +750 DEG F YC-53, ZC22
C A1481 T TEMP SHEAR PAD 5 FIBERGLASS BL	FQ		4 1	S/S -100 +750 DEG F YC13, ZC-57
C A1502 T TEMP SIDE HS BOND LOC A	PCM		2 1	S/S -260 +600 DEG F XC65, 71.5DEG
C A1505 T TEMP SIDE HS BOND LOC B	PCM		2 1	S/S -260 +600 DEG F XC65, 200DEG
C A1509 T TEMP SIDE HS BOND LOC C	PCM		2 1	S/S -260 +600 DEG F XC65, 321DEG
C A1940 S STRAIN AX AFT HS OUT RADIAL	FQ		4 10	S/S -5000 +5000 UI/IN RADIUS 56, 90DEG
C A1941 S STRAIN AX AFT HS IN RADIAL	FQ		4 10	S/S -5000 +5000 UI/IN RADIUS 56, 90DEG
C A1942 S STRAIN AX AFT HS OUT TANG	FQ		4 10	S/S -5000 +5000 UI/IN RADIUS 57, 90DEG
C A1943 S STRAIN AX AFT HS IN TANG	FQ		4 10	S/S -5000 +5000 UI/IN RADIUS 57, 90DEG
C A1944 S STRAIN AX AFT HS OUT RADIAL	FQ		4 10	S/S -5000 +5000 UI/IN RADIUS 56, 180DEG
C A1945 S STRAIN AX AFT HS IN RADIAL	FQ		4 10	S/S -5000 +5000 UI/IN RADIUS 56, 180DEG
C A1946 S STRAIN AX AFT HS OUT TANG	FQ		4 10	S/S -5000 +5000 UI/IN RADIUS 57, 180DEG



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MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
					DISP	GSE SYRU	
C A1947 S STRAIN AX AFT HS IN TANG	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS 57,180DEG
C A1948 S STRAIN AX AFT HS OUT RADIAL	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS 56,0UEG
C A1949 S STRAIN AX AFT HS IN RADIAL	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS 56,0DEG
C A1950 S STRAIN AX AFT HS OUT TANG	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS 57,0DEG
C A1951 S STRAIN AX AFT HS IN TANG	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS 57,0DEG
S A2020 G STRAIN AX TENSION BOLT BEAM 2	FQ			4	0-200 CPS	+0	+40K LBS .. BEAM 2
S A2021 G STRAIN AX TENSION BUILT BEAM 4	FQ			4	0-80 CPS	+0	+40K LBS BEAM 4
S A2022 G STRAIN AX TENSION BOLT BEAM 6	FQ			4	0-80 CPS	+0	+40K LBS BEAM 6
S A2210 D X AXIS VIB SM AFT BLKHD NEAR FC	FQ			4	2K CPS	-75	+75 G XS203,64R,128DEG
S A2211 D RADIAL VIB SM AFT BLKHD NEAR FC	FQ			4	2K CPS	-75	+75 G XS203,64R,128DEG
S A2212 D X AXIS VIB HE PRESS PANEL	FQ			4	2K CPS	-500	+500 G XS268,50R,152DEG
S A2213 D TANG VIB HE PRESS PANEL	FQ			4	2K CPS	-500	+500 G XS268,50R,152DEG
S A2214 D Y AXIS VIB SM U2 TANK MOUNT	FQ			4	250 CPS	-20	+20 G XS333,47.5R,290DEG
S A2215 D Z AXIS VIB SM U2 TANK MOUNT	FQ			4	250 CPS	-20	+20 G XS333,47.5R,290DEG
S A2216 D RADIAL VIB SM BEAM 4 AND SHELL	FQ			4	1K CPS	-50	+50 G XS355,76R,152DEG
S A2217 D TANG VIB SM BEAM 4 AND SHELL	FQ			4	1K CPS	-50	+50 G XS355,76R,152DEG
S A2218 D RADIAL VIB SM EPS RADIATOR PANEL	FQ			4	500 CPS	-75	+75 G XS238,76R,315DEG



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MEAS.	ID	MEASUREMENT DESCRIPTION		TM/TR DISP GSF		MCPF RESPONSE SYRO		DATA RANGE LOW HIGH UNITS		LOCATION/REMARKS	
S	A2360	T TEMP SECT 3 IN SURF		PCM		2	1	S/S	-190 +200	DEG F	XS280, 56DEG
S	A2361	T TEMP SECT 6 IN SURF		PC4		2	1	S/S	-100 +200	DEG F	XS280, 236DEG
S	A2364	T TEMP SECT 3 FUEL TANK SURF		PCM		2	1	S/S	-100 +200	DEG F	XS280, 66DEG
S	A2365	T TEMP SECT 6 FUEL TANK SURF		PCM		2	1	S/S	-100 +200	DEG F	XS280, 246DEG
S	A2366	T TEMP SECT 4 IN SURF		PCM		2	1	S/S	-100 +200	DEG F	XS280, 145DEG
S	A2367	T TEMP SECT 1 IN SURF		PCM		2	1	S/S	-100 +200	DEG F	XS280, 325DEG
C	A2530	D Y AXIS VIB CM LER KICKRING		FQ		4	2K	CPS	-50 +50	G	YC42.6, YC-42, ZC33
C	A2531	D Z AXIS VIB CM LER KICKRING		FQ		4	2K	CPS	-50 +50	G	YC42.6, YC-42, ZC33
C	A2532	D X AXIS VIB CM LES HNYCMB BLKHD		FQ		4	1K	CPS	-25 +25	G	YC23, YC20.8, ZC33
C	A2533	D Z AXIS VIB CM LES HNYCMB BLKHD		FQ		4	1K	CPS	-25 +25	G	YC23, YC20.8, ZC33
C	A2534	D X AXIS VIB CM LES SEP MECH		FQ		4	2K	CPS	-200 +200	G	YC81, YC24, ZC-24
C	A2535	D RADIAL VIB CM LES SEP MECH		FQ		4	2K	CPS	-200 +200	G	YC81, YC24, ZC-24
C	A3360	K FWD HS RADIATION GAGE LOC 2		FQ		4	1	S/S	+0 +50	B/F/S	YC50, 90DEG
C	A3361	K FWD HS RADIATION GAGE LOC 15		FQ		4	1	S/S	+0 +50	B/F/S	YC50, 270DEG
C	A3363	K AFT HS RADIATION GAGE LOC 3		FQ		4	1	S/S	+0 +1200	B/F/S	ZC55, YC0
C	A3364	K AFT HS RADIATION GAGE LOC 7		FQ		4	1	S/S	+0 +1200	B/F/S	ZC-50, YC0
C	A3401	R FLUX UMBILICAL LOC 1		FQ		4	1	S/S	+0 +150	B/F/S	UMB AT 90 DEG



MEAS.	ID	MEASUREMENT DESCRIPTION	IM/LIR	DISP.	GSE	SYRO	DATA RANGE		LOCATION/REMARKS	
							LOW	HIGH	UNITS	
		STRUCTURES								
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C A3402 R	FLUX	UMBILICAL LOC 2	FQ				4	1	S/S	+0 +150 B/F/S UMB AT 90 DEG
C A3600 T	TEMP	ATTACH RING AT 90 DEG	FQ				4	1	S/S	-100 +750 DEG F XC43, 90DEG
C A3601 T	TEMP	ATTACH RING AT 270 DEG	FQ				4	1	S/S	-190 +750 DEG F XC43, 270DEG
C A3640 T	TEMP	STRINGER 5	FQ				4	1	S/S	-100 +750 DEG F XC50, 90DEG
C A3641 T	TEMP	STRINGER 10	FQ				4	1	S/S	-100 +750 DEG F XC50, 181.7DEG
C A3642 T	TEMP	STRINGER 12C CREW HATCH	FQ				4	1	S/S	-100 +750 DEG F XC50, 247DEG
C A5010 R	FLUX	AFT HS LOC 1	FQ				4	1	S/S	+0 +1200 B/F/S XCO, YCO, ZCO
C A5011 R	FLUX	AFT HS LOC 2	FQ				4	1	S/S	+0 +1500 B/F/S ZC39, 90DEG
C A5012 R	FLUX	AFT HS LOC 3	FQ				4	1	S/S	+0 +1500 B/F/S ZC55, 90DEG
C A5013 R	FLUX	AFT HS LOC 4	FQ				4	1	S/S	+0 +1500 B/F/S ZC65, 90DEG
C A5014 R	FLUX	AFT HS LOC 5	FQ				4	1	S/S	+0 +1200 B/F/S ZC72, 90DEG
C A5015 R	FLUX	AFT HS LOC 6	FQ				4	1	S/S	+0 +750 B/F/S ZC76, 90DEG
C A5016 R	FLUX	AFT HS LOC 7	FQ				4	1	S/S	+0 +750 B/F/S ZC-50, 270DEG
C A5017 R	FLUX	AFT HS LOC 8	FQ				4	1	S/S	+0 +1000 B/F/S YC50, 0DEG
C A5018 R	FLUX	AFT HS SHEAR PAD 3	FQ				4	1	S/S	+0 +1500 B/F/S YC-58, ZC22
C A5019 R	FLUX	AFT HS SHEAR PAD 5	FQ				4	1	S/S	+0 +1500 B/F/S YC14, ZC-64
C A5020 R	FLUX	AFT HS SHEAR PAD 5	FQ				4	1	S/S	+0 +1500 B/F/S YC12, ZC-51



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MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						DISP	GSE SYRO	
						LOW	HIGH	UNITS
C	A5040	P AFT HT SHLD BNDRY STATIC PRESS 1	FQ	4	1	S/S	+0	+10 PSIA XCO,YCO,ZCO
C	A5041	P AFT HT SHLD BNDRY STATIC PRESS 2	FQ	4	1	S/S	+0	+10 PSIA ZC39,90DEG
C	A5042	P AFT HT SHLD BNDRY STATIC PRESS 3	FQ	4	1	S/S	+0	+10 PSIA ZC55,90DEG
C	A5043	P AFT HT SHLD BNDRY STATIC PRESS 4	FQ	4	1	S/S	+0	+10 PSIA ZC65,90DEG
C	A5044	P AFT HT SHLD BNDRY STATIC PRESS 5	FQ	4	1	S/S	+0	+10 PSIA ZC72,90DEG
C	A5045	P AFT HT SHLD BNDRY STATIC PRESS 6	FQ	4	1	S/S	+0	+5 PSIA ZC76,90DEG
C	A5046	P AFT HT SHLD BNDRY STATIC PRESS 7	FQ	4	1	S/S	+0	+5 PSIA ZC-50,180DEG
C	A5060	R CHAR AFT -S LOC 7	FQ	4	1	S/S	.14	.98 IN ZC-50,270DEG,.12IN
C	A5061	R CHAR AFT HS LOC 5	FQ	4	1	S/S	.21	.147 IN ZC72,90DEG,0.18IN
C	A5C80	T TEMP AFT -S LOC 1	FQ	4	1	S/S	+32	+750 DEG F XCO,YCO,ZCO
C	A5C85	T TEMP AFT -S LOC 2	FQ	4	1	S/S	+32	+750 DEG F ZC39,90DEG
C	A5D90	T TEMP AFT HS LOC 3	FQ	4	1	S/S	+32	+750 DEG F ZC55,90DEG
C	A5095	T TEMP AFT HS LOC 4	FQ	4	1	S/S	+32	+750 DEG F ZC65,90DEG
C	A5100	T TEMP AFT HS LOC 5 BL	FQ	4	1	S/S	+32	+750 DEG F ZC72,90DEG,BL
C	A5101	T TEMP AFT HS LOC 5	FQ	4	1	S/S	+32	+1500 DEG F ZC72,90DEG,0.9IN
C	A5102	T TEMP AFT HS LOC 5	FQ	4	1	S/S	+32	+2500 DEG F ZC72,90DEG,0.6IN
C	A5103	T TEMP AFT HS LOC 5	FQ	4	1	S/S	+32	+3500 DEG F ZC72,90DEG,0.3IN



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MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR DISP GSE SYRO	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						LOW	HIGH	
C A5104 T	TEMP AFT HS LOC 5	FQ		4	1	S/S	+32 +5000	DEG F LC72,90DEG,0,1IN
C A5105 T	TEMP AFT HS LOC 6 BL	FQ		4	1	S/S	+32 +750	DEG F LC76,90DEG,BL
C A5110 T	TEMP AFT HS LOC 7	FQ		4	1	S/S	+32 +3500	DEG F LC-50,270DEG,.05IN
C A5111 T	TEMP AFT HS LOC 7	FQ		4	1	S/S	+32 +3500	DEG F LC-50,270DEG,.15IN
C A5112 T	TEMP AFT HS LOC 7	FQ		4	1	S/S	+32 +2500	DEG F LC-50,270DEG,.3IN
C A5113 T	TEMP AFT HS LOC 7	FQ		4	1	S/S	+32 +2000	DEG F LC-50,270DEG,.6IN
C A5114 T	TEMP AFT HS LOC 7	FQ		4	1	S/S	+32 +750	DEG F LC-50,270DEG, BL
C A5115 T	TEMP AFT HS LOC 8 BL	FQ		4	1	S/S	+32 +750	DEG F YC50,0DEG, BL
C A5550 R	FLUX SIDE HS LOC 1	FQ		4	1	S/S	0 +150	B/F/S XC23,90DEG
C A5551 R	FLUX SIDE HS LOC 2	FQ		4	1	S/S	+0 +100	B/F/S XC50,90DEG
C A5552 R	FLUX SIDE HS LOC 3	FQ		4	1	S/S	+0 +100	B/F/S XC80,90DEG
C A5553 R	FLUX FWD HS LOC 4	FQ		4	1	S/S	+0 +75	B/F/S XC104,90DEG
C A5554 R	FLUX SIDE HS LOC 5	FQ		4	1	S/S	+0 +100	B/F/S XC23,135DEG
C A5555 P	FLUX SIDE HS LOC 6	FQ		4	1	S/S	+0 +75	B/F/S XC80,135DEG
C A5556 R	FLUX SIDE HS LOC 7	FQ		4	1	S/S	+0 +75	B/F/S XC20,180DEG
C A5557 R	FLUX SIDE HS LOC 8	FQ		4	1	S/S	+0 +50	B/F/S XC50,180DEG
C A5559 R	FLUX SIDE HS LOC 9	FQ		4	1	S/S	+0 +50	B/F/S XC80,180DEG



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MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MC/PF RESPONSE	DATA RANGE		LOCATION/REMARKS
					TM/TR	DISP GSE SYRO	
C A5559	R	FLUX FWD HS LOC 10	FQ	4	1	S/S	+0 +50 B/F/S XC104,180DEG
C A5560	R	FLUX SIDE HS LOC 11	FQ	4	1	S/S	+0 +75 B/F/S XC20,225DEG
C A5561	R	FLUX SIDE HS LOC 12	FQ	4	1	S/S	+0 +50 B/F/S XC50,225DEG
C A5562	R	FLUX SIDE HS LOC 13	FQ	4	1	S/S	+0 +50 B/F/S XC80,225DEG
C A5563	R	FLUX SIDE HS LOC 14	FQ	4	1	S/S	+0 +75 B/F/S XC20,270DEG
C A5564	R	FLUX SIDE HS LOC 15	FQ	4	1	S/S	+0 +50 B/F/S XC50,270DEG
C A5565	R	FLUX SIDE HS LOC 16	FQ	4	1	S/S	+0 +50 B/F/S XC80,270DEG
C A5566	R	FLUX FWD HS LOC 17	FQ	4	1	S/S	+0 +50 B/F/S XC104,270DEG
C A5580	P	PRESS SIDE HS LOC 1	FQ	4	1	S/S	+0 +1 PSIA XC23,20DEG
C A5581	P	PRESS SIDE HS LOC 2	FQ	4	1	S/S	+0 +0.5 PSIA XC50,90DEG
C A5582	P	PRESS SIDE HS LOC 3	FQ	4	1	S/S	+0 +0.5 PSIA XC80,90DEG
C A5583	P	PRESS FWD HS LOC 4	FQ	4	1	S/S	+0 +0.5 PSIA XC104,90DEG
C A5584	P	PRESS SIDE HS LOC 5	FQ	4	1	S/S	+0 +0.3 PSIA XC23,135DEG
C A5586	P	PRESS SIDE HS LOC 7	FQ	4	1	S/S	+0 +0.3 PSIA XC20,180DEG
C A5588	P	PRESS SIDE HS LOC 9	FQ	4	1	S/S	+0 +0.3 PSIA XC80,180DEG
C A5590	P	PRESS SIDE HS LOC 11	FQ	4	1	S/S	+0 +0.3 PSIA XC20,225DEG
C A5593	P	PRESS SIDE HS LOC 14	FQ	4	1	S/S	+0 +0.3 PSIA XC20,270DEG



## APJ110C A P O L L O C M / S M . B L O C K I M E A S U R E M E N T L I S T

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MEAS.	ID	MEASUREMENT DESCRIPTION	INSTRUMENT	ACCESSIBILITY	MCPC RESPONSE	DATA RANGE	LOCATION/REMARKS
			DISP	GSE	SYRO	LOW	HIGH UNITS
C	A5595 P	PRESS FWD HS LOC 16	FQ	4	1	S/S	+0 +0.3 PSIA XC80, 270DEG
C	A5610 R	CHAR SIDE HS LOC 1	FQ	4	1	S/S	.10 .70 IN XC23, 90DEG, .1INC
C	A5611 R	CHAR SIDE HS LOC 2	FQ	4	1	S/S	.09 .63 IN XC50, 90DEG, 0, 1INC
C	A5612 R	CHAR SIDE HS LOC 3	FQ	4	1	S/S	.09 .63 IN XC80, 90DEG, 0, 1INC
C	A5613 R	CHAR FWD HS LOC 4	FQ	4	1	S/S	.09 .63 IN XC104, 90DEG, .08INC
C	A5614 R	CHAR SIDE HS LOC 5	FQ	4	1	S/S	.09 .63 IN XC23, 135DEG, .08INC
C	A5616 R	CHAR SIDE HS LOC 7	FQ	4	1	S/S	.09 .63 IN XC20, 180DEG, .08INC
C	A5617 R	CHAR SIDE HS LOC 8	FQ	4	1	S/S	.06 .42 IN XC50, 180DEG, .08INC
C	A5618 R	CHAR SIDE HS LOC 9	FQ	4	1	S/S	.06 .42 IN XC80, 180DEG, .08INC
C	A5619 R	CHAR FWD HS LOC 10	FQ	4	1	S/S	.06 .42 IN XC104, 180DEG, .08INC
C	A5620 R	CHAR SIDE HS LOC 11	FQ	4	1	S/S	.09 .63 IN XC20, 225DEG, .08INC
C	A5622 R	CHAR SIDE HS LOC 14	FQ	4	1	S/S	.09 .63 IN XC20, 270DEG, .08INC
C	A5624 R	CHAR SIDE HS LOC 15	FQ	4	1	S/S	.06 .42 IN XC50, 270DEG, .06INC
C	A5625 R	CHAR SIDE HS LOC 16	FQ	4	1	S/S	.06 .42 IN XC80, 270DEG, .06INC
C	A5626 R	CHAR FWD HS LOC 17	FQ	4	1	S/S	.06 .42 IN XC104, 270DEG, .06INC
C	A5700 T	TEMP SIDE HS LOC 1-A	FQ	4	1	S/S	-100 +2500 DEG F XC23, 90DEG, .05IN
C	A5701 T	TEMP SIDE HS LOC 1-B	FQ	4	1	S/S	-100 +2000 DEG F XC23, 90DEG, .2IN

MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR DISP GSE	ACCESSIBILITY SYRO	MCPC RESPONSE		DATA RANGE LOW HIGH UNITS	LOCATION/REMARKS
				4	1	S/S	-100 +1500 DEG F XC23, 90DEG, .4IN
C A5702 T TEMP SIDE HS LOC 1-C	FQ			4	1	S/S	-100 +750 DEG F XC23, 90DEG, BL
C A5703 T TEMP SIDE HS LOC 1 BL	FQ			4	1	S/S	-100 +2500 DEG F XC50, 90DEG, .05IN
C A5705 T TEMP SIDE HS LOC 2-A	FQ			4	1	S/S	-100 +2000 DEG F XC50, 90DEG, .2IN
C A5706 T TEMP SIDE HS LOC 2-S	FQ			4	1	S/S	-100 +1500 DEG F XC50, 90DEG, .4IN
C A5707 T TEMP SIDE HS LOC 2-C	FQ			4	1	S/S	-100 +1500 DEG F XC50, 90DEG, .4IN
C A5708 T TEMP SIDE HS LOC 2 BL	FQ			4	1	S/S	-120 +750 DEG F XC50, 90DEG, BL
C A5710 T TEMP SIDE HS LOC 3-A	FQ			4	1	S/S	-100 +2500 DEG F XC80, 90DEG, .05IN
C A5711 T TEMP SIDE HS LOC 3-B	FQ			4	1	S/S	-100 +2000 DEG F XC80, 90DEG, .2IN
C A5712 T TEMP SIDE HS LOC 3-C	FQ			4	1	S/S	-100 +1500 DEG F XC80, 90DEG, .4IN
C A5713 T TEMP SIDE HS LOC 3 BL	FQ			4	1	S/S	-100 +750 DEG F XC80, 90DEG, BL
C A5715 T TEMP FWD HS LOC 4-A	FQ			4	1	S/S	-100 +2500 DEG F XC104, 90DEG, .05IN
C A5716 T TEMP FWD HS LOC 4-B	FQ			4	1	S/S	-100 +1500 DEG F XC104, 90DEG, .2IN
C A5717 T TEMP FWD HS LOC 4 BL	FQ			4	1	S/S	-100 +750 DEG F XC104, 90DEG, BL
C A5720 T TEMP SIDE HS LOC 5-A	FQ			4	1	S/S	-100 +2500 DEG F XC23, 135DEG, .05IN
C A5721 T TEMP SIDE HS LOC 5-B	FQ			4	1	S/S	-100 +2000 DEG F XC23, 135DEG, .2IN
C A5722 T TEMP SIDE HS LOC 5-C	FQ			4	1	S/S	-100 +1500 DEG F XC23, 135DEG, .4IN
C A5723 T TEMP SIDE HS LOC 5 BL	FQ			4	1	S/S	-100 +750 DEG F XC23, 135DEG, BL



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MEAS. ID MEASUREMENT DESCRIPTION TM/TR ACCESSIBILITY MCPF RESPONSE DATA RANGE LOCATION/REMARKS  
DISP GSE SYRO LOW HIGH UNITS

C A5725 T TEMP SIDE HS LOC 6 BL	FQ	4	1	S/S	-100 +750 DEG F XC80,1350EG, BL
C A5730 T TEMP SIDE HS LOC 7-A	FQ	4	1	S/S	-100 +2500 DEG F XC20,180DEG,.05IN
C A5731 T TEMP SIDE HS LOC 7-B	FQ	4	1	S/S	-100 +2000 DEG F XC20,180DEG,.2IN
C A5732 T TEMP SIDE HS LOC 7-C	FQ	4	1	S/S	-100 +1500 DEG F XC20,180DEG,.4IN
C A5733 T TEMP SIDE HS LOC 7 RL	FQ	4	1	S/S	-100 +750 DEG F XC20,180DEG, BL
C A5735 T TEMP SIDE HS LOC 8-A	FQ	4	1	S/S	-100 +2500 DEG F XC50,180DEG,.05IN
C A5736 T TEMP SIDE HS LOC 8-R	FQ	4	1	S/S	-100 +2000 DEG F XC50,180DEG,.2IN
C A5737 T TEMP SIDE HS LOC 8-C	FQ	4	1	S/S	-100 +1500 DEG F XC50,180DEG,.4IN
C A5738 T TEMP SIDE HS LOC 8 BL	FQ	4	1	S/S	-100 +750 DEG F XC50,180DEG, BL
C A5740 T TEMP SIDE HS LOC 9-A	FQ	4	1	S/S	-100 +2500 DEG F XC80,180DEG,.05IN
C A5741 T TEMP SIDE HS LOC 9-B	FQ	4	1	S/S	-100 +2000 DEG F XC80,180DEG,.2IN
C A5742 T TEMP SIDE HS LOC 9 BL	FQ	4	1	S/S	-100 +750 DEG F XC80,180DEG, BL
C A5745 T TEMP FWD HS LOC 10-A	FQ	4	1	S/S	-100 +2500 DEG F XC104,180DEG,.05IN
C A5746 T TEMP FWD HS LOC 10-S	FQ	4	1	S/S	-100 +2000 DEG F XC104,180DEG,.2IN
C A5747 T TEMP FWD HS LOC 10 BL	FQ	4	1	S/S	-100 +750 DEG F XC104,180DEG, BL
C A5750 T TEMP SIDE HS LOC 11-A	FQ	4	1	S/S	-100 +2500 DEG F XC20,225DEG,.05IN
C A5751 T TEMP SIDE HS LOC 11-R	FQ	4	1	S/S	-100 +2000 DEG F XC20,225DEG,.2IN



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MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR... DISP	ACCESSIBILITY	MC/PF RESPONSE	DATA RANGE	LOCATION/REMARKS	
							LOW	HIGH
C A5752	T TEMP SIDE HS LOC 11 BL	FQ		4 1	S/S	-100 +750 DEG F	X C20, 225DEG, BL	
C A5755	T TEMP SIDE HS LOC 12 BL	FQ		4 1	S/S	-100 +750 DEG F	X C50, 225DEG, BL	
C A5760	I TEMP SIDE HS LOC 13 BL	FQ		4 1	S/S	-100 +750 DEG F	X C80, 225DEG, BL	
C A5765	T TEMP SIDE HS LOC 14-A	FQ		4 1	S/S	-100 +2500 DEG F	X C20, 270DEG, .05IN	
C A5766	T TEMP SIDE HS LOC 14-B	FQ		4 1	S/S	-100 +2000 DEG F	X C20, 270DEG, .2IN	
C A5767	T TEMP SIDE HS LOC 14 BL	FQ		4 1	S/S	-100 +750 DEG F	X C20, 270DEG, BL	
C A5770	T TEMP SIDE HS LOC 15-A	FQ		4 1	S/S	-100 +2500 DEG F	X C50, 270DEG, .05IN	
C A5771	T TEMP SIDE HS LOC 15-B	FQ		4 1	S/S	-100 +2000 DEG F	X C50, 270DEG, .2IN	
C A5772	T TEMP SIDE HS LOC 15 BL	FQ		4 1	S/S	-100 +750 DEG F	X C50, 270DEG, BL	
C A5775	T TEMP SIDE HS LOC 16-A	FQ		4 1	S/S	-100 +2500 DEG F	X C80, 270DEG, .05IN	
C A5776	T TEMP SIDE HS LOC 16-B	FQ		4 1	S/S	-100 +2000 DEG F	X C80, 270DEG, .2IN	
C A5777	T TEMP SIDE HS LOC 16 BL	FQ		4 1	S/S	-100 +750 DEG F	X C80, 270DEG, BL	
C A5780	T TEMP FWD HS LOC 17-A	FQ		4 1	S/S	-100 +2500 DEG F	X C104, 270DEG, .05IN	
C A5781	T TEMP FWD HS LOC 17-B	FQ		4 1	S/S	-100 +2000 DEG F	X C104, 270DEG, .2IN	
C A5782	T TEMP FWD HS LOC 17 BL	FQ		4 1	S/S	-100 +750 DEG F	X C104, 270DEG, BL	
C A5811	T ASTRO-SEXT AREA STL HNYCMB LOC 1	FQ		4 1	S/S	-109 +1000 DEG F	X C75, 92 DEG	
C A5812	T ASTRO-SEXT AREA STL HNYCMB LOC 2	FQ		4 1	S/S	-109 +1000 DEG F	X C75, 88 DEG	



MEAS. ID	SUBSYSTEM STRUCTURES	MEASUREMENT DESCRIPTION	IM/TIR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS	
							LOW	HIGH
C A5813 T	APOLLO CM / S.M - BLO C.K. I	ASTRO-SEXT AREA AL HNYCMB LOC 1	FQ		4 1	S/S	-109	+300 DEG F XC75, 88 DEG
C A5814 T		ASTRO-SEXT AREA AL HNYCMB LOC 2	FQ		4 1	S/S	-109	+300 DEG F XC75, 88 DEG
C A5815 T		ASTRO-SEXT AREA AL HNYCMB LOC 3	FQ		4 1	S/S	-109	+300 DEG F XC75, 83 DEG
C A5816 T		ASTRO-SEXT AREA AL HNYCMB LOC 4	FQ		4 1	S/S	-109	+300 DEG F XC75, 98 DEG
C A5817 T		ASTRO-SEXT AREA AL HNYCMB LOC 5	FQ		4 1	S/S	-109	+300 DEG F XC75, 92 DEG
C A5818 T		ASTRO-SEXT AREA AL HNYCMB LOC 6	FQ		4 1	S/S	-109	+300 DEG F XC75, 94 DEG
C A7446 T	TEMP C-BAND ANT CON AT 258 DEG		FQ		4 1	S/S	-100	+750 DEG F
C A7447 T	TEMP C-BAND ANT CON AT 166 DEG		FQ		4 1	S/S	-100	+750 DEG F
C A7603 T	TEMP CM AIR VENT BAFFLE		FQ		4 1	S/S	-100	+1000 DEG F
C A7607 T	TEMP RCS FUEL DUMP BOLT/PLUG		FQ		4 1	S/S	-100	+750 DEG F
C A7608 T	TEMP HS TIE DOWN BOLT LOC A		FQ		4 1	S/S	+32	+750 DEG F
C A76C9 T	TEMP HS TIE DOWN BOLT LOC B		FQ		4 1	S/S	+32	+750 DEG F
C A7610 T	TEMP HS TIE DOWN BOLT LOC C		FQ		4 1	S/S	+32	+750 DEG F
C A7674 T	TEMP CM AIRLOCK TUNNEL +Z AXIS		FQ		4 1	S/S	-100	+400 DEG F AIRLOCK TUNNEL
C A7675 T	TEMP END BULKHEAD +Z AXIS		FQ		4 1	S/S	-100	+400 DEG F END BLKHD
C A7676 T	TEMP TOP SURFACE -P CM RCS ENG		FQ		4 1	S/S	-100	+750 DEG F -P CM RCS ENG
C A7760 T	TEMP PILOT CHUTE MORTAR		FQ		4 1	S/S	-100	+400 DEG F CHUTE MORTAR



SUBSYSTEM STRUCTURES	MEAS. ID	MEASUREMENT DESCRIPTION	TM/IR DISP GSE SYRO	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						LOW	HIGH	
C A7761 T TEMP CHUTE HARNESS	FQ			4 1	S/S	-100	+400	DEG F CHUTE HARNESS
C A7762 T TEMP MAIN CHUTE PACK	FQ			4 1	S/S	-100	+400	DEG F
C A7800 T TEMP CM PRESS HULL AFT BLKHD 1	FQ			4 1	S/S	-100	+400	DEG F
C A7801 T TEMP CM PRESS HULL AFT BLKHD 2	FQ			4 1	S/S	-100	+400	DEG F
C A7808 T TEMP HATCH OUT WINDOW SUPT	FQ			4 1	S/S	-100	+750	DEG F HATCH WINDOW
C A7820 T TEMP LH SIDE WINDOW BL	FQ			4 1	S/S	-100	+750	DEG F LH WINDOW
C A7821 T TEMP LH SIDE WINDOW HS FRAME	FQ			4 1	S/S	-100	+750	DEG F LH WINDOW
C A7822 T TEMP LH SIDE WINDOW IN FRAME	FQ			4 1	S/S	-100	+750	DEG F LH WINDOW
A A7860 T TEMP SLA OUTER SHELL 1	FQ			4 1	S/S	+0	+600	DEG F LH WINDOW
A A7861 T TEMP SLA OUTER SHELL 2	FQ			4 1	S/S	+0	+600	DEG F XA785, 214DEG
A A7862 T TEMP SLA OUTER SHELL 3	FQ			4 1	S/S	+0	+600	DEG F XA599, 180DEG
A A7863 T TEMP SLA OUTER SHELL 4	FQ			4 1	S/S	+0	+600	DEG F XA609, 180DEG
A A7864 T TEMP SLA OUTER SHELL 5	FQ			4 1	S/S	+0	+600	DEG F XA730, 174DEG
A A7865 T TEMP SLA OUTER SHELL 6	FQ			4 1	S/S	+0	+600	DEG F XA540, 174DEG
A A7866 T TEMP SLA OUTER SHELL 7	FQ			4 1	S/S	+0	+600	DEG F XA645, 174DEG
A A7867 T TEMP SLA OUTER SHELL 8	FQ			4 1	S/S	+0	+600	DEG F XA609, 135DEG
A A7868 T TEMP SLA OUTER SHELL 9	FQ			4 1	S/S	+0	+600	DEG F XA830, 174DEG





VL-01

## APJ1CC APOLLO CM/SM BLOCK I MEASUREMENT LIST

SUBSYSTEM  
STRUCTURES

MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY DISP GSE	MCFF RESPONSE SYRO	DATA RANGE		LOCATION/REMARKS
					LOW	HIGH	
A A8128 S SLA OUTER SHELL LONG STRAIN 3	FQ			4	10	S/S -5000 +5000 UI/IN XA775,214DEG	
A A8129 S SLA OUTER SHELL CIRC STRAIN 3	FQ			4	10	S/S -5000 +5000 UI/IN XA775,214DEG	
A A8130 S SLA INNER SHELL LONG STRAIN 3	FQ			4	10	S/S -5000 +5000 UI/IN XA775,214DEG	
A A8131 S SLA INNER SHELL CIRC STRAIN 3	FQ			4	10	S/S -5000 +5000 UI/IN XA775,214DEG	
A A8132 S SLA OUTER SHELL LONG STRAIN 4	FQ			4	10	S/S -5000 +5000 UI/IN XA775,304DEG	
A A8133 S SLA OUTER SHELL CIRC STRAIN 4	FQ			4	10	S/S -5000 +5000 UI/IN XA775,304DEG	
A A8134 S SLA INNER SHELL LONG STRAIN 4	FQ			4	10	S/S -5000 +5000 UI/IN XA775,304DEG	
A A8135 S SLA INNER SHELL CIRC STRAIN 4	FQ			4	10	S/S -5000 +5000 UI/IN XA775,304DEG	
C A8520 T TEMP CM S-BAND ANT WINDOW LOC A	FQ			4	1	S/S -100 +700 DEG F XC20,76,135 DEG	
C A8521 T TEMP CM S-BAND ANT WINDOW LOC B	FQ			4	1	S/S -100 +700 DEG F XC20,76,225 DEG	
C A8522 T TEMP CM S-BAND ANT WINDOW LOC C	FQ			4	1	S/S -100 +700 DEG F XC20,76,135 DEG	
C A8523 T TEMP CM S-BAND ANT WINDOW LOC D	FQ			4	1	S/S -100 +700 DEG F XC20,76,225 DEG	



MEAS.	ID	MEASUREMENT DESCRIPTION	IMTR	ACCESSIBILITY	MCPPF RESPONSE	DATA RANGE	LOCATION/REMARKS					
							DISP	GSE	SYRO	LOW	HIGH	UNITS
				P	3	S/S	ABC	ACB	PHASE			
C	CC120	B PHASE ROTATION AC BUS 1		P	3	S/S	ABC	ACB	PHASE			
C	CC121	B PHASE ROTATION AC BUS 2		P	3	S/S	ABC	ACB	PHASE			
C	CC130	E POWER FACTOR AC BUS 1 PHASE A	AG	3	OLAG	OLEAD	PF					
C	CC131	E POWER FACTOR AC BUS 1 PHASE B	AG	3	OLAG	OLEAD	PF					
C	CC132	E POWER FACTOR AC BUS 1 PHASE C	AG	3	OLAG	OLEAD	PF					
C	CC133	E POWER FACTOR AC BUS 2 PHASE A	AG	3	OLAG	OLEAD	PF					
C	CC134	E POWER FACTOR AC BUS 2 PHASE B	AG	3	OLAG	OLEAD	PF					
C	CC135	E POWER FACTOR AC BUS 2 PHASE C	AG	3	OLAG	OLEAD	PF					
C	CC175	I TEMP STATIC INVERTER 1	PCM+	2 X 1	S/S	+32	+248	DEG F				
C	CC176	I TEMP STATIC INVERTER 2	PCM+	2 X 1	S/S	+32	+248	DEG F				
C	CC177	I TEMP STATIC INVERTER 3	PCM+	2 X 1	S/S	+32	+248	DEG F				
C	CC178	T TEMP BATTERY A CASE	PCM+	2 X 1	S/S	+32	+248	DEG F				
C	CC179	T TEMP BATTERY B CASE	PCM+	2 X 1	S/S	+32	+212	DEG F				
C	CC181	F FREQUENCY AC BUS 1 PHASE B	SM	1		+380	+420	CPS				
C	CC182	F FREQUENCY AC BUS 1 PHASE C	SM	1		+380	+420	CPS				
C	CC183	F FREQUENCY AC BUS 2 PHASE B	SM	1		+380	+420	CPS				
C	CC184	F FREQUENCY AC BUS 2 PHASE C	SM	1		+380	+420	CPS				



ELECTRICAL POWER							MEASUREMENT LIST			VL-01
MEAS.	ID	MEASUREMENT DESCRIPTION	IMTR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOW	HIGH	UNITS	LOCATION/REMARKS
C	C0188	P PRESS BATT COMPARTMENT (MANIF)	PCM	S/	2	10	S/S	+0	+13 PSIA	
C	C0191	V DC VOLTAGE AUX BATTERY 1	PCM	S/	2	10	S/S	0	+40 VDC	
C	C0192	V DC VOLTAGE AUX BATTERY 2	PCM	S/	2	10	S/S	0	+40 VDC	
C	C0193	V DC VOLTAGE AUX BATTERY 3	PCM	S/	2	10	S/S	0	+40 VDC	
C	C0200	V AC VOLTAGE MAIN BUS 1 PHASE A	PCM+	SM	A	1 X 10	S/S	+0	+150 VAC	
C	C0201	V AC VOLTAGE MAIN BUS 1 PHASE B	PCM	SM	A	1 X 10	S/S	+0	+150 VAC	
C	C0202	V AC VOLTAGE MAIN BUS 1 PHASE C	PCM	SM	A	1 X 10	S/S	+0	+150 VAC	
C	C0203	V AC VOLTAGE MAIN BUS 2 PHASE A	PCM+	SM	A	1 X 10	S/S	+0	+150 VAC	
C	C0204	V AC VOLTAGE MAIN BUS 2 PHASE B	PCM	SM	A	1 X 10	S/S	+0	+150 VAC	
C	C0205	V AC VOLTAGE MAIN BUS 2 PHASE C	PCM	SM	A	1 X 10	S/S	+0	+150 VAC	
C	C0206	V DC VOLTAGE MAIN BUS A	PCM+	SM	A	1 X 10	S/S	+0	+45 VDC	
C	C0207	V DC VOLTAGE MAIN BUS B	PCM+	SM	A	1 X 10	S/S	+0	+45 VDC	
C	C0209	V DC VOLTAGE POST LANDING BUS		TP	3	1	S/S	0	+45 VDC	
C	C0210	V DC VOLTAGE BATTERY BUS A	PCM	SM		1 X 10	S/S	+0	+45 VDC	
C	C0211	V DC VOLTAGE BATTERY BUS B	PCM	SM		1 X 12	S/S	+0	+45 VDC	
C	C0212	V DC VOLTAGE POST LANDING BATTERY	PCM	SM		1 X 10	S/S	+0	+45 VDC	
C	C0213	F FREQUENCY AC BUS 1 PHASE A	PCM	SM	AP	1 X 1	S/S	+380	+420 CPS	



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## APOLLO C M / S M BLOCK I MEASUREMENT LIST

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MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
					DISP	GSE SYRO	
C C0214 V DC	VOLTAGE BATT CHARGER OUT	PCM	SM	1 10	S/S	+0	+45 VDC
C C0215 C DC	CURRENT BATT CHARGER OUT	PCM+	SM	1 X 10	S/S	+0	+5 AMP
C C0217 F	FREQUENCY AC BUS 2 PHASE A	PCM	SM	AP 1 X 1	S/S	+380	+420 CPS
C C0222 C DC	CURRENT BATTERY A	PCM	SM	1 X 10	S/S	+0	+100 AMP
C C0223 C DC	CURRENT BATTERY B	PCM	SM	1 X 10	S/S	+0	+100 AMP
C C0224 C DC	CURRENT POST LANDING BATTERY	PCM	SM	1 X 10	S/S	+0	+100 AMP
C C0227 V DC	VOLTAGE PYRO BATT A	PCM	SM	1 X 10	S/S	+0	+40 VDC
C C0228 V DC	VOLTAGE PYRO BATT B	PCM	SM	1 X 10	S/S	+0	+40 VDC
C C0232 V DC	VOLTAGE BATTERY RELAY BUS	PCM+		2 X 10	S/S	+0	+45 VDC
C C0236 X AC	UNDER-OVER-VOLTAGE BUS 1		AP	3 10	S/S	OFF	ON EVENT
C C0237 X AC	UNDER-OVER-VOLTAGE BUS 2		AP	3 10	S/S	OFF	ON EVENT
C C0242 X	OVERLOAD CURRENT AC BUS 1		AP	3 10	S/S	OFF	ON EVENT
C C0243 X	OVERLOAD CURRENT AC BUS 2		AP	3 10	S/S	OFF	ON EVENT
C C0340 V AC	VOLTAGE MAIN BUS 1 PH A		AP	3 10	S/S	+105	+130 VAC
C C0341 V AC	VOLTAGE MAIN BUS 1 PH B		AP	3 10	S/S	+105	+130 VAC
C C0342 V AC	VOLTAGE MAIN BUS 1 PH C		AP	3 10	S/S	+105	+130 VAC
C C0343 V AC	VOLTAGE MAIN BUS 2 PH A		AP	3 10	S/S	+105	+130 VAC



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APOLLO CSM BLOCK I MEASUREMENT LIST  
SUBSYSTEM ELECTRICAL POWER

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MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	DISP GSE	MCPIF RESPONSE	DATA RANGE		LOCATION/REMARKS
						LOW	HIGH	
C	C0344	V AC VOLTAGE MAIN BUS 2 PH B		PCM	AP 3 10	S/S	+105 +130	VAC
C	C0345	V AC VOLTAGE MAIN BUS 2 PH C		PCM	AP 3 10	S/S	+105 +130	VAC
C	C0346	V DC VOLTAGE MAIN BUS A		PCM	AP 3 10	S/S	+20 +42	VDC
C	C0347	V DC VOLTAGE MAIN BUS B		PCM	AP 3 10	S/S	+20 +42	VDC
C	C0451	X ESSENTIAL AC LOAD XFER		PCM	2 10	S/S		XFER EVENT
S	C2060	P N2 PRESSURE F/C 1 REGULATED	PCM	STB	1 X 1	S/S	+0 +75	PSIA
S	C2061	P N2 PRESSURE F/C 2 REGULATED	PCM	STB	1 X 1	S/S	+0 +75	PSIA
S	C2062	P N2 PRESSURE F/C 3 REGULATED	PCM	STB	1 X 1	S/S	+0 +75	PSIA
S	C2066	P O2 PRESSURE F/C 1 REGULATED	PCM	STB	1 X 10	S/S	+0 +75	PSIA
S	C2067	P O2 PRESSURE F/C 2 REGULATED	PCM	STB	1 X 10	S/S	+0 +75	PSIA
S	C2068	P O2 PRESSURE F/C 3 REGULATED	PCM	STB	1 X 10	S/S	+0 +75	PSIA
S	C2069	P H2 PRESSURE F/C 1 REGULATED	PCM	STB	1 X 10	S/S	+0 +75	PSIA
S	C2070	P H2 PRESSURE F/C 2 REGULATED	PCM	STB	1 X 10	S/S	+0 +75	PSIA
S	C2071	P H2 PRESSURE F/C 3 REGULATED	PCM	STB	1 X 10	S/S	+0 +75	PSIA
S	C2075	X F/C INLINE HEATER ON		USM	3 1	S/S		EVENT
S	C2076	X F/C INLINE HEATER OFF		USM	3 1	S/S		EVENT
S	C2081	T TEMP F/C 1 CCND EXHAUST	PCM+	SM	1 X 1	S/S	+150 +250	DEG F



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## APJ10C A P C L L C C M / S M B\_L\_O\_S K I MEASUREMENT LIST

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MEAS. ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY		MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
		IM/TR	DISP_GSE SYRO		LOW	HIGH	
S C2082 T TEMP F/C 2 COND EXHAUST	PCM+	SM	1 X 1	S/S	+150	+250	DEG F
S C2083 T TEMP F/C 3 COND EXHAUST	PCM+	SM	1 X 1	S/S	+150	+250	DEG F
S C2084 T TEMP F/C 1 SKIN	PCM+	SM	1	S/S	+30	+550	DEG F
S C2085 T TEMP F/C 2 SKIN	PCM+	SM	1 X 1	S/S	+80	+550	DEG F
S C2086 T TEMP F/C 3 SKIN	PCM+	SM	1 X 1	S/S	+80	+550	DEG F
S C2087 T TEMP FC 1 RADIATOR OUTLET	PCM+	STB	1 X 1	S/S	-50	+300	DEG F
S C2088 T TEMP FC 2 RADIATOR OUTLET	PCM+	STB	1 X 1	S/S	-50	+300	DEG F
S C2089 T TEMP FC 3 RADIATOR OUTLET	PCM+	STB	1 X 1	S/S	-50	+300	DEG F
S C2110 V DC VOLTAGE SM MAIN BUS A	USM	3	1	S/S	0	+40	VDC
S C2111 V DC VOLTAGE SM MAIN BUS B	USM	3	1	S/S	0	+40	VDC
S C2113 C DC CURRENT F/C 1 OUTPUT	PCM+	SM	1	10	S/S	+0	+100 AMP
S C2114 C DC CURRENT F/C 2 OUTPUT	PCM+	SM	1 X 10	S/S	+0	+100 AMP	
S C2115 C DC CURRENT F/C 3 OUTPUT	PCM+	SM	P 1 X 10	S/S	+0	+100 AMP	
S C2116 V DC VOLTS FC 1 OUTPUT	USM	3	10	S/S	+25	+40	VDC
S C2117 V DC VOLTS FC 2 OUTPUT	USM	3	10	S/S	+25	+40	VDC
S C2118 V DC VOLTS FC 3 OUTPUT	USM	3	10	S/S	+25	+40	VDC
S C2120 X FUEL CELL 1 BUS A DISCONNECT	PCME	TB	1	10	S/S	OFF	ON EVENT



APJ110C A P C L L O . C M / S M B L O C K I M E A S U R E M E N T L I S T - - - - - YL-01

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MEAS.	ID	MEASUREMENT DESCRIPTION	TIME/JR.	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
				DISP GSE	SYRO	LUM HIGH UNITS	
S	C2121 X	FUEL CELL 2 BUS A DISCONNECT	PCM	TB	1 10	S/S OFF	ON EVENT
S	C2122 X	FUEL CELL 3 BUS A DISCONNECT	PCM	TB	1 10	S/S OFF	ON EVENT
S	C2125 X	FUEL CELL 1 BUS B DISCONNECT	PCM	TB	1 10	S/S OFF	ON EVENT
S	C2126 X	FUEL CELL 2 BUS B DISCONNECT	PCM	TB	1 10	S/S OFF	ON EVENT
S	C2127 X	FUEL CELL 3 BUS B DISCONNECT	PCM	TB	1 10	S/S OFF	ON EVENT
S	C2130 X	PURGE VALVE H2 F/C 1 OPERATE		TP 3	10	S/S CLOSE	OPEN EVENT
S	C2131 X	PURGE VALVE H2 F/C 2 OPERATE		TP 3	10	S/S CLOSE	OPEN EVENT
S	C2132 X	PURGE VALVE H2 F/C 3 OPERATE		TP 3	10	S/S CLOSE	OPEN EVENT
S	C2133 X	PURGE VALVE C2 F/C 1 OPERATE		TP 3	10	S/S CLOSE	OPEN EVENT
S	C2134 X	PURGE VALVE O2 F/C 2 OPERATE		TP 3	10	S/S CLOSE	OPEN EVENT
S	C2135 X	PURGE VALVE O2 F/C 3 OPERATE		TP 3	10	S/S CLOSE	OPEN EVENT
S	C2139 R	FLOW RATE H2 F/C 1	PCM	SM	1 X 10	S/S +0	+0.2 LB/HR
S	C2140 R	FLOW RATE H2 F/C 2	PCM	SM	1 X 10	S/S +0	+0.2 LB/HR
S	C2141 R	FLOW RATE H2 F/C 3	PCM	SM	1 X 10	S/S +0	+0.2 LB/HR
S	C2142 R	FLOW RATE O2 F/C 1	PCM	SM	1 X 10	S/S +0	+1.6 LB/HR
S	C2143 R	FLOW RATE O2 F/C 2	PCM	SM	1 X 10	S/S +0	+1.6 LB/HR
S	C2144 R	FLOW RATE C2 F/C 3	PCM	SM	1 X 10	S/S +0	+1.6 LB/HR



APJ110C APOLLO CSM BLOCK 1 MEASUREMENT LIST VL-91

ELECTRICAL POWER  
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MEAS.	ID	MEASUREMENT DESCRIPTION	TMR/DISP	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			GSE SYRO	PCM	PCM	LOW HIGH	UNITS
S	C2160	X PH FACTOR WATER CONDITION F/C 1	PCM	STB	1 X 1	S/S	NOR HIGH EVENT
S	C2161	X PH FACTOR WATER CONDITION F/C 2	PCM	STB	1 X 1	S/S	NOR HIGH EVENT
S	C2162	X PH FACTOR WATER CONDITION F/C 3	PCM	STB	1 X 1	S/S	NOR HIGH EVENT
S	C2323	X FUEL CELL 1 SHUT OFF MON	PCME	TB	1 10	S/S	CLOSE OPEN EVENT
S	C2324	X FUEL CELL 2 SHUT OFF MON	PCME	TB	1 10	S/S	CLOSE OPEN EVENT
S	C2325	X FUEL CELL 3 SHUT OFF MON	PCME	TB	1 10	S/S	CLOSE OPEN EVENT
S	C2326	X FC 1 02/H2 SHUTOFF VLV OPEN HOLD	USM	3 1	S/S	OFF	HOLD EVENT
S	C2327	X FC 2 02/H2 SHUTOFF VLV OPEN HOLD	USM	3 1	S/S	OFF	HOLD EVENT
S	C2328	X FC 3 02/H2 SHUTOFF VLV OPEN HOLD	USM	3 1	S/S	OFF	HOLD EVENT
C	C2401	X DCV INPUT INVERTER 1	USM	3 1	S/S	0	+28V EVENT
C	C2402	X DCV INPUT INVERTER 2	USM	3 1	S/S	0	+28V EVENT
C	C2403	X DCV INPUT INVERTER 3	USM	3 1	S/S	0	+28V EVENT
S	C2410	X DC POWER DFACE SW OPEN	USM	3 1	S/S	OPEN CLOSE	EVENT



APJ110C A P O L L O C M / S M B L O C K I M E A S U R E M E N T L I S T VL-01						
SUBSYSTEM MASTER EVENT SEQUENCE CONTROLLER		SPACECRAFT 17		SEP 19, 1966 VEH		
MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR DISP	MCPF RESPONSE GSE SYRO	DATA RANGE LOW	LOCATION/REMARKS HIGH UNITS
C	D0002 X	LES ABORT INITIATE SIGNAL A	PCM		2 . 10	S/S ABORT EVENT
C	D0005 V	DC VOLTAGE PYRO BUS A	PCM		2 . 10	S/S 0 +40 VDC
C	D0006 V	DC VOLTAGE PYRO BUS B	PCM		2 . 10	S/S 0 +40 VDC
C	D0023 X	CM-SM SEP RELAY CLOSE A	PCM		2 . 10	S/S SEP EVENT
C	D0024 X	CM-SM SEP RELAY CLOSE B	PCM		2 . 10	S/S SEP EVENT
C	D0037 X	ELS SEQ START RLY CLOSE A	PCM		2 . 10	S/S START EVENT
C	D0039 X	ELS SEQ START RLY CLOSE B	PCM		2 . 10	S/S START EVENT
C	D0044 X	BOOSTER CUT-OFF SIG A	PCM		2 . 10	S/S CUT EVENT
C	D0045 X	BOOSTER CUT-OFF SIG B	PCM		2 . 10	S/S CUT EVENT
C	D0062 X	LES ABORT INITIATE SIGNAL B	PCM		2 . 10	S/S ABORT EVENT
C	D0084 X	MESC PYRO FIRING RLY IND SAFE A	USM		3 . 1	S/S SAFE EVENT
C	D0085 X	MESC PYRO FIRING RLY IND SAFE B	USM		3 . 1	S/S SAFE EVENT
C	D0088 X	MESC LOGIC SW IND SAFE	USI		3 . 1	S/S SAFE EVENT
C	D0089 X	MESC LOGIC SW IND ARM	USI		3 . 1	S/S ARM EVENT
C	D0105 X	TWR JETTISON A	PCM		2 . 10	S/S JETT EVENT
C	D0106 X	TWR JETTISON B	PCM		2 . 10	S/S JETT EVENT
C	D0120 X	CANARD DEPLOY A	PCM		2 . 10	S/S DEPLOY EVENT



APJ110C A\_P\_C\_L\_L\_O\_ C\_M / S\_M \_ B\_L\_O\_C\_K \_ I \_ M\_E\_A\_S\_U\_R\_E\_M\_E\_N\_T \_ L\_I\_S\_T \_ YL-01

SUBSYSTEM MASTER EVENT SEQUENCE CONTROLLER

MEAS.	IN	MEASUREMENT DESCRIPTION	TM/TR	ACCEESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						LOW	HIGH	
C D0121	X	CANARD DEPLOY B	PCME	-	2	10	S/S	DEPLOY EVENT
C D0125	X	ADAPT/SM SEP INITIATE A	PCME	-	2	10	S/S	INIT EVENT
C D0126	X	ADAPT/SM SEP INITIATE B	PCME	-	2	10	S/S	INIT EVENT
C D0127	X	ADAPT SEPARATION A	PCME	-	2	10	S/S	SEP EVENT
C D0128	X	ADAPT SEPARATION B	PCME	-	2	10	S/S	SEP EVENT
C D0130	X	HAND CONTROLLER INPUT A	PCME	-	2	10	S/S	ABORT EVENT
C D0131	X	HAND CONTROLLER INPUT B	PCME	-	2	10	S/S	ABORT EVENT
C D0132	X	EUS ABORT LOGIC IN NO 1	PCME	-	2	10	S/S	VOTE EVENT
C D0133	X	EDS ABORT LOGIC IN NO 2	PCME	-	2	10	S/S	VOTE EVENT
C D0134	X	EOS ABORT LOGIC IN NO 3	PCME	-	2	10	S/S	VOTE EVENT
C D0135	X	EDS ABORT LOGIC OUT A	PCME	AP	2	10/100	S/S	ABORT EVENT
C D0136	X	FDS ABORT LOGIC OUT B	PCME	AP	2	10/100	S/S	ABORT EVENT
C D0140	X	DIRECT ULLAGE ON A	PCME	-	2	10	S/S	ON EVENT
C D0141	X	DIRECT ULLAGE ON B	PCME	-	2	10	S/S	ON EVENT
C D0170	X	RCS ACTIVATE SIG A	PCME	-	2	10	S/S	ACT EVENT
C D0171	X	RCS ACTIVATE SIG B	PCME	-	2	10	S/S	ACT EVENT
C D0173	X	CM RCS PRESS SIG A	PCME	-	2	10	S/S	PRESS EVENT



MEASUREMENT LIST							VL-01
SUBSYSTEM MASTER EVENT SEQUENCE CONTROLLER	SPACECRAFT	17	DATA RANGE	DATA RANGE	LOCATION/REMARKS		
MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	LOW	HIGH UNITS
C	D0174	X C4 RCS PRESS SIG B	PCM	2	10	S/S	PRESS, EVENT
C	D0200	V DC VOLTAGE LOGIC BUS A	PCM	2	10	S/S	+0 +37 VDC
C	D0201	V DC VOLTAGE LOGIC BUS B	PCM	2	10	S/S	+0 +37 VDC
C	D0218	X MESC PYRO SWITCH IND SAFE	PCM	USI	3	1	S/S
C	D0219	X MESC PYRC SWITCH IND ARM	PCM	USI	3	1	S/S
C	D0230	X FWD HS JETTISON A	PCM	2	10	S/S	JETT EVENT
C	D0231	X FWD HS JETTISON B	PCM	2	10	S/S	JETT EVENT
C	D0270	X CM RCS CONTROLLERS A AND B SAFE	PCM	USM	3	1	S/S
C	D0315	X EDS FENABLE A	PCM	2	10	S/S	SAFE EVENT
C	D0316	X EDS ENABLE B	PCM	2	10	S/S	SAFE EVENT
C	D0320	X EDS UNSAFE A	PCM	USI	3	1	S/S
C	D0321	X EDS UNSAFE B	PCM	USI	3	1	S/S
S	D0350	V SM BATT MONITOR A	USM	3	1	S/S	0 +40 VDC
S	D0351	V SM BATT MONITOR B	USM	3	1	S/S	0 +40 VDC
S	D0352	X SM JETTISON SAFE A	USM	3	1	S/S	SAFE EVENT
S	D0353	X SM JETTISON SAFE B	USM	3	1	S/S	SAFE EVENT
C	D0550	X DSIF ANT DEPLOY RLY CLOSE A	A	3			EVENT



APJ110C APOLLO C/M/SM BLOCK I MEASUREMENT LIST VL-01

SUBSYSTEM  
MASTER EVENT SEQUENCE CONTROLLER

MEAS. ID MEASUREMENT DESCRIPTION SPACECRAFT 17  
 ACCESSIBILITY MCPF RESPONSE DATA RANGE LOCATION/REMARKS  
 IM/TR DISP GSE SYRO LOW HIGH UNITS

C	D0551 X DSIF ANT DEPLOY RLY CLOSE B	A	3			EVENT
C	D0560 X MESC TDI SYSTEM A 30 MILLISEC	AP	3	100	S/S	END EVENT
C	D0561 X MESC TDI SYSTEM B 30 MILLISEC	AP	3	100	S/S	END EVENT
C	D0562 X MESC TD2 SYSTEM A 30 MILLISEC	AP	3	100	S/S	END EVENT
C	D0563 X MESC TD2 SYSTEM R 30 MILLISEC	AP	3	100	S/S	END EVENT
C	D0564 X MESC TD3 SYSTEM A 0.1 SEC	AP	3	100	S/S	END EVENT
C	D0565 X MESC TD3 SYSTEM B 0.1 SEC	AP	3	100	S/S	END EVENT
C	D0566 X MESC TD4 SYSTEM A 0.1 SEC	AP	3	100	S/S	END EVENT
C	D0567 X MESC TD4 SYSTEM B 0.1 SEC	AP	3	100	S/S	END EVENT
C	D0568 X MESC TD5 SYSTEM A 11 SEC	AP	3	10	S/S	END EVENT
C	D0569 X MESC TD5 SYSTEM B 11 SEC	AP	3	10	S/S	END EVENT
C	D0570 X MESC TD6 SYSTEM A 11 SEC	AP	3	10	S/S	END EVENT
C	D0571 X MESC TD6 SYSTEM B 11 SEC	AP	3	10	S/S	END EVENT
C	D0572 X MESC TD7 SYSTEM A 3 SEC	AP	3	10	S/S	END EVENT
C	D0573 X MESC TD7 SYSTEM B 3 SEC	AP	3	10	S/S	END EVENT
C	D0574 X MESC TDR SYSTEM A 3 SEC	AP	3	10	S/S	END EVENT
C	D0575 X MESC TDR SYSTEM R 3 SEC	AP	3	10	S/S	END EVENT

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APJ110C A P C L L O C M L S M B L O C K 1 M E A S U R E M E N T L I S T

SUBSYSTEM  
MASTER EVENT SEQUENCE CCNTROLLER

SPACECRAFT

TD11 TD12 TD13 TD14 TD15 TD16 TD17 TD18 TD19 TD20 TD21 TD22 TD23

MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPIF RESPONSE	DATA RANGE	LOCATION/REMARKS
		IM/TR	DISP	GSE SYRO	LOW	HIGH UNITS
C	D0580	X MESC TD11 SYSTEM A 1.7 SEC	AP	3 10	S/S	END EVENT
C	D0581	X MESC TD11 SYSTEM B 1.7 SEC	AP	3 10	S/S	END EVENT
C	D0582	X MESC TD12 SYSTEM A 1.7 SEC	AP	3 10	S/S	END EVENT
C	D0583	X MESC TD12 SYSTEM B 1.7 SEC	AP	3 10	S/S	END EVENT
C	D0584	X MESC TD13 SYSTEM A 0.8 SEC	AP	3 10	S/S	END EVENT
C	D0585	X MESC TD13 SYSTEM B 0.8 SEC	AP	3 10	S/S	END EVENT
C	D0586	X MESC TD14 SYSTEM A 0.8 SEC	AP	3 10	S/S	END EVENT
C	D0587	X MESC TD14 SYSTEM B 0.8 SEC	AP	3 10	S/S	END EVENT
C	D0588	X MESC TD15 SYSTEM A 1.0 SEC	AP	3 10	S/S	END EVENT
C	D0589	X MESC TD15 SYSTEM B 1.0 SEC	AP	3 10	S/S	END EVENT
C	D0590	X MESC TD16 SYSTEM A 1.0 SEC	AP	3 10	S/S	END EVENT
C	D0591	X MESC TD16 SYSTEM B 1.0 SEC	AP	3 10	S/S	END EVENT
C	D0592	X MESC TD17 SYSTEM A 0.4 SEC	AP	3 10	S/S	END EVENT
C	D0593	X MESC TD17 SYSTEM B 0.4 SEC	AP	3 10	S/S	END EVENT
C	D0594	X MESC TD18 SYSTEM A 0.4 SEC	AP	3 10	S/S	END EVENT
C	D0595	X MESC TD18 SYSTEM B 0.4 SEC	AP	3 10	S/S	END EVENT
C	D0644	X MESC TD 23 SYSTEM A 1.7 SEC	AP	3 10	S/S	END EVENT



APJ110C		A P N L L C C M / S M		B L O C K I		M E A S U R E M E N T		L I S T		V L - 0 1	
S U B S Y S T E M		M A S T E R E V E N T S E Q U E N C E C O N T R O L L E R		S P A C E C R A F T		1 7				S E P T 1 9 , 1 9 6 6	
M E A S .	I n	M E A S U R E M E N T D E S C R I P T I O N		T H / T R .		A C C E S S I B I L I T Y		M C P F R E S P O N S E		D A T A R A N G E	
								D I S P	G S E	S Y R D	L O W _ H I G H _ U N I T S
C	D0645	X	MESC TD 23 SYSTEM B	1.7	SEC			AP	3	10	S/S
C	D0646	X	MESC TD 24 SYSTEM A	1.7	SEC			AP	3	10	S/S
C	D0647	X	MESC TD 24 SYSTEM B	1.7	SEC			AP	3	10	S/S
S	D0660	X	SMJC Z2TD1 SYS A	2	SFC			TP	3	10	S/S
S	D0661	X	SMJC Z2TD1 SYS B	2	SEC			TP	3	10	S/S
S	D0662	X	SMJC Z2TD2 SYS A	2	SEC			TP	3	10	S/S
S	D0663	X	SMJC Z2TD2 SYS B	2	SEC			TP	3	10	S/S
S	D0664	X	SMJC Z3TD1 SYS A	5.5	SEC			TP	3	1	S/S
S	D0665	X	SMJC Z3TD1 SYS B	5.5	SEC			TP	3	1	S/S
S	D0666	X	SMJC Z3TD2 SYS A	5.5	SEC			TP	3	1	S/S
S	D0667	X	SMJC Z3TD2 SYS B	5.5	SEC			TP	3	1	S/S
C	D1006	X	LES MOTOR INITIATE A			P C M E			2	10	S/S
C	D1007	X	LES MOTOR INITIATE B			P C M E			2	10	S/S
C	D1008	X	PITCH CONT MOTOR FIRE RELAY A					AP	3	10	S/S
C	D1009	X	PITCH CONT MOTOR FIRE RELAY B					AP	3	10	S/S



APJ110C A P C L L C M / S M . . . B L O C K I . . . M E A S U R E M E N T L I S T							VL-01
SUBSYSTEM	SPACECRAFT	17	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS	
EARTH LANDING SEQUENCE CONTROLLER			TMR DISP GSE SYRO	LOW S/S	HIGH UNITS		
C E0001 X DROGUE DEPLOY RELAY CLOSE A	PCME	2	10	S/S	DEPLOY EVENT		
C E0002 X DROGUE DEPLOY RELAY CLOSE B	PCME	2	10	S/S	DEPLOY EVENT		
C E0003 X MAIN CHUTE DEPL-URG REL RLY A	PCME	2	10	S/S	DEPLOY EVENT		
C E0004 X MAIN CHUTE DEPL-DRG REL RLY B	PCME	2	10	S/S	DEPLOY EVENT		
C E0007 X BARO SW LOCK-IN RLY CLOSE A	PCME	2	10	S/S	CLOSE EVENT		
C E0008 X BARO SW LOCK-IN RLY CLOSE B	PCME	2	10	S/S	CLOSE EVENT		
C E0025 X BAROSWITCH S1 SYSTEM A	AP	3	10	S/S	CLOSE EVENT		
C E0026 X BAROSWITCH S3 SYSTEM A	AP	3	10	S/S	CLOSE EVENT		
C E0027 X BAROSWITCH S3 SYSTEM B	AP	3	10	S/S	CLOSE EVENT		
C E0029 X BAROSWITCH S1 SYSTEM B	AP	3	10	S/S	CLOSE EVENT		
C E0030 X BAROSWITCH S2 SYSTEM A	AP	3	10	S/S	CLOSE EVENT		
C E0031 X BAROSWITCH S2 SYSTEM B	AP	3	10	S/S	CLOSE EVENT		
C E0032 X BAROSWITCH S4 SYSTEM A	AP	3	10	S/S	CLOSE EVENT		
C E0033 X BAROSWITCH S4 SYSTEM B	AP	3	10	S/S	CLOSE EVENT		
C E0035 P BAROMETRIC PRESS STATIC REF	PCH	2	1	S/S	+0 +15 PSIA		
C E0040 X ELS TIME DELAY T01 SYS A 2 SEC	AP	3	10	S/S	END EVENT		
C E0041 X ELS TIME DELAY T01 SYS B 2 SEC	AP	3	10	S/S	END EVENT		



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SUBSYSTEM

EARTH LANDING SEQUENCE CONTROLLER

MEAS.	IC	MEASUREMENT DESCRIPTION	IM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			DILSP	GSE	SYRO	LOW	HIGH UNLIS
C	E0042	X ELS TIME DELAY TD2 SYS A 2 SEC	AP	3	10	S/S	END EVENT
C	E0043	X ELS TIME DELAY TD2 SYS B 2 SEC	AP	3	10	S/S	END EVENT
C	E0044	X ELS TIME DELAY TD3 SYS A 14 SEC	AP	3	10	S/S	END EVENT
C	E0045	X ELS TIME DELAY TD3 SYS B 14 SEC	AP	3	10	S/S	END EVENT
C	E0046	X FLS TIME DELAY TD4 SYS A 14 SEC	AP	3	10	S/S	END EVENT
C	E0C47	X ELS TIME DELAY TD4 SYS B 14 SEC	AP	3	10	S/S	END EVENT
C	E0C48	X ELS TD3 AND TD4 ARMING SYS A	A	3			
C	E0049	X ELS TD3 AND TD4 ARMING SYS B	A	3			
C	E0310	X ELS PYRO RELAY K1_SAFE_A	USM	3	1	S/S	SAFE EVENT
C	E0311	X ELS PYRO RELAY K2_SAFE_A	USM	3	1	S/S	SAFE EVENT
C	E0312	X ELS PYRO RELAY K3_SAFE_A	USM	3	1	S/S	SAFE EVENT
C	E0313	X ELS PYRO RELAY K4_SAFE_A	USM	3	1	S/S	SAFE EVENT
C	E0314	X ELS PYRO RELAY K1_SAFE_B	USM	3	1	S/S	SAFE EVENT
C	E0315	X ELS PYRO RELAY K2_SAFE_B	USM	3	1	S/S	SAFE EVENT
C	E0316	X ELS PYRO RELAY K3_SAFE_B	USM	3	1	S/S	SAFE EVENT
C	E0317	X ELS PYRO RELAY K4_SAFE_B	USM	3	1	S/S	SAFE EVENT
C	E0321	X MAIN CHUTE DISCONNECT RELAY A	PCME	2	10	S/S	DISC EVENT



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APJ110C A\_P\_O\_L\_L\_C\_C\_M\_A\_S\_M\_B\_L\_O\_C\_K\_I M\_E\_A\_S\_U\_R\_E\_M\_E\_N\_T\_I\_L\_I\_S\_T  
SUBSYSTEM EARTH LANDING SEQUENCE CONTROLLER  
MEAS. IC MEASUREMENT DESCRIPTION IM/TR MC/PF RESPONSE DATA RANGE LOCATION/REMARKS  
C EO322 X MAIN CHUTE DISCONNECT RELAY B PCME 17 VEH  
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ACCESSIBILITY DISP GSE SYRO LOW HIGH UNITS  
DISC EVENT \$/\$



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## APJ11OC A P O L L O C \_ C M / S M \_ 6 L O C K I \_ M E A S U R E M E N T \_ L I S T

## SUBSYSTEM ENVIRONMENTAL CONTROL

MEAS.	ID	MEASUREMENT DESCRIPTION	TIME/IR	ACCESSIBILITY	MCPIF RESPONSE	DATA RANGE		LOCATION/REMARKS
						LOW	HIGH	
C	F0001	P PRESSURE CABIN	PCM+	2 X 1	S/S	+0	+17	PSIA
C	F0002	T TEMP CABIN	PCM+	2 X 1	S/S	+4.0	+125	DEG F
C	F0006	P PRESS SURGE TANK	PCM	2 X 1	S/S	+5.0	+1050	PSIA
C	F0009	Q QUANTITY WASTEF WATER TANK	PCM+	2 X 1	S/S	+0	+100	PCNT
C	F0010	G QUAN POTABLE H2O TANK	PCM+	2 X 1	S/S	+0	+100	PCNT
C	F0016	P PRESS GLYCOL PUMP OUTLET	PCM+	2 X 1	S/S	+0	+60	PSIA
C	F0017	T TEMP GLYCOL EVAP OUTLET STEAM	PCM	2 X 1	S/S	+20	+95	DEG F
C	F0018	T TEMP GLYCOL EVAP OUTLET LIQUID	PCM+	2 X 1	S/S	+25	+75	DEG F
C	F0019	Q QUANTITY GLYCOL ACCUM	PCM+	2 X 1	S/S	+0	+100	PCNT
S	F0030	Q QUANTITY H2 TANK 1	PCM+	2 X 1	S/S	+0	+28	LB
S	F0031	Q QUANTITY H2 TANK 2	PCM+	2 X 1	S/S	+0	+28	LB
S	F0032	Q QUANTITY O2 TANK 1	PCM+	2 X 1	S/S	+0	+320	LB
S	F0033	Q QUANTITY O2 TANK 2	PCM+	2 X 1	S/S	+0	+320	LB
C	F0034	P BACK PRESS GLYCOL EVAPURATOR	PCM+	1 X 10	S/S	+0.05	+0.25	PSIA
C	F0035	R FLOWRATE ECS 02	PCM	2 X 1	S/S	+0.2	+1.0	LB/HR
C	F0036	P PRESS OUTLET 02 REG SUPPLY	PCM	2 X 1	S/S	+0	+150	PSIA
S	F0037	P PRESS O2 TANK 1	PCM+	2 X 1	S/S	+50	+1050	PSIA



MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR DISP GSE SYRO	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						LOW	HIGH	
S	F0038	P PRESS O2 TANK 2	PCM+	2 X 1	S/S	+50	+1050	PSIA
S	FC039	P PRESS H2 TANK 1	PCM+	2	1	S/S	+0	+350 PSIA
S	F0040	P PRESS H2 TANK 2	PCM+	2 X 1	S/S	+0	+350	PSIA
S	F0041	T TEMP O2 TANK 1	PCM+	2 X 1	S/S	-325	+80	DEG F
S	F0042	T TEMP O2 TANK 2	PCM+	2 X 1	S/S	-325	+80	DEG F
S	F0043	T TEMP H2 TANK 1	PCM+	2 X 1	S/S	-625	-200	DEG F
S	F0044	T TEMP H2 TANK 2	PCM+	2 X 1	S/S	-625	-200	DEG F
S	F0092	X PRESS LOW O2 TANKS 1 AND 2	IP	3	1	S/S	NOR	LOW EVENT
S	F0093	X MOTOR SW-CLOSE O2 TANKS 1 AND 2	IP	3	1	S/S	NOR	LOW EVENT
S	F0094	X PRESS LOW H2 TANKS 1 AND 2	IP	3	1	S/S	NOR	LOW EVENT
S	FCC95	X MOTOR SW-CLOSE H2 TANKS 1 AND 2	TP	3	1	S/S	OPEN CLOSE	EVENT
C	F0120	P PRESS H2O AND GLYCOL TANKS	EQ	4	1	S/S	+0	+50 PSIA
C	F0245	T TEMP O2 REG INLET	FQ	4	1	S/S	-50	+150 DEG F
C	F0320	P PRESS IMJ. BYPASS	I	3				
C	F0321	P PRESS GLYCOL SERIES CK VAL	I	3				
S	F0324	P PRESS SM GSE GLYCOL SUPPLY	I	3				
S	F0325	P PRESS SM GSE GLYCOL RETURN	I	3				



MEAS.	ID	MEASUREMENT DESCRIPTION	IM/JR	DISP GSE SYRO	DATA RANGE		LOCATION/REMARKS
					LOW	HIGH	
C	F0327	P PRESS WASTE H2O TANK DRAIN	FQ		4	1	S/S +0 +50 PSTA
C	F0329	P PRESS H2O CHILLER OUT			T	3	
C	F0330	P PRESS H2O HEATER OUT			T	3	
C	F0331	P PRESS TANK PRESS SYS			T	3	
C	F0332	P PRESS SURGE TANK SYS			T	3	
C	F0333	P PRESS BACK PACK SUPPLY			T	3	
C	F0335	P PRESS SUIT CONNECTOR 1			T	3	
C	F0336	P PRESS SUIT CONNECTOR 2			T	3	
C	F0337	P PRESS SUIT CONNECTOR 3			T	3	
C	F0339	P PRESS RETURN AIR SERIES CK VLV			T	3	
S	F0360	V FAN MOTOR OPERATION TANK 1 D2			TP	3	S/S
S	F0361	V FAN MOTOR OPERATION TANK 2 D2			TP	3	S/S
S	F0362	V FAN MOTOR OPERATION TANK 1 H2			TP	3	S/S
S	F0363	V FAN MOTOR OPERATION TANK 2 H2			TP	3	S/S
C	F0481	T TEMP CP BRANCH 1 INLET	FQ		4	1	S/S +40 +150 DEG F
C	F0482	T TEMP CP BRANCH 1 OUTLET	FQ		4	1	S/S +40 +150 DEG F
C	F0483	T TEMP CP BRANCH 2 INLET	FQ		4	1	S/S +40 +150 DEG F



		MEASUREMENT LIST						VL-01	
		SUBSYSTEM ENVIRONMENTAL CONTROL						SEPT 19, 1966 VEH	
MEAS.	ID	MEASUREMENT DESCRIPTION	IM/TR	DISP	GSE	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS	
C	F0484	T TEMP CP BRANCH 2 OUTLET	FQ			4	1	S/S	+40 +150 DEG F
C	F0549	P DIFF PRESS COLDPLATE BRANCH 1	FQ			4	1	S/S	+0 +2.0 PSID
C	F0550	P DIFF PRESS COLDPLATE BRANCH 2	FQ			4	1	S/S	+0 +10 PSID



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## APJ110C A P O L L O C M / S H B L O C K I M E A S U R E M E N T L I S T

SPACECRAFT 17

SUBSYSTEM GUIDANCE AND NAVIGATION

MEAS. ID MEASUREMENT DESCRIPTION TM/TR DISP GSE MCPI RESPONSE DATA RANGE LOCATION/REMARKS

			ACCESSIBILITY	MCPI RESPONSE	DATA RANGE	LOCATION/REMARKS
			LOW	HIGH	UNITS	
C	G0001 V COMPUTER DIGITAL DATA 40 BITS	PCM'D	2 X 50	S/S		
C	G1000 V +120 VDC IRIG SUPPLY	AP	3	1	S/S	0 +150 VDC PSA TRAY 2
C	G1001 V +120 VDC IRIG SUPPLY RMS	P	3	1	S/S	0 2 VRMS PSA TRAY 2
C	G1003 V +12 VDC IRIG SUPPLY	AP	3	1	S/S	+0 +15 VDC PSA TRAY 2
C	G1006 V +32 VDC IRIG SUPPLY	AP	3	1	S/S	+0 +40 VDC PSA TRAY 2
C	G1010 V +120 VDC PIPA SUPPLY	AP	3	1	S/S	0 +150 VDC PSA TRAY 7
C	G1011 V +120 VDC PIPA NOISE RMS	P	3	1	S/S	0 2 VRMS PSA TRAY 7
C	G1016 V +32 VDC PIPA SUPPLY	AP	3	1	S/S	0 +40 VDC PSA TRAY 2
C	G1020 V +13 VDC AGC SUPPLY	AP	3	1	S/S	+0 +20 VDC PSA TRAY 10
C	G1021 V +13 VDC AGC SUPPLY NOISE RMS	P	3	1	S/S	0 0.8 VRMS PSA TRAY 10
C	G1022 X +13 VDC AGC SUPPLY NOISE PEAKS	P	3	10	S/S	GLITCH EVENT PSA TRAY 10
C	G1030 V +3 VDC AGC SUPPLY	AP	3	1	S/S	0 +5 VDC PSA TRAY 10
C	G1031 V +3 VDC AGC SUPPLY NOISE RMS	P	3	1	S/S	0 0.8 VRMS PSA TRAY 10
C	G1032 X +3 VDC AGC SUPPLY NOISE PEAKS	P	3	10	S/S	GLITCH EVENT PSA TRAY 10
C	G1100 V -28 VDC SUPPLY	A	3	-30	+0 VDC	PSA TRAY 1
C	G1101 V -28 VDC SUPPLY	PCM+	2 X 1	S/S	0 -25 VDC	
C	G1110 V 2.5 VDC TM BIAS	PCM+	2	1	S/S	0 +5 VDC

APJ110C		A P J L I C C M L S M B L O C K 1		M E A S U R E M E N T L I S T		VL-01
SUBSYSTEM		SPACECRAFT		DATA RANGE		
MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			IM/TR DISP GSE SYRO	LOW HIGH	UNITS	
C	G1200	V IMU 800 CPS DRIVE RMS	A	3		PSA TRAY 2
C	G1201	V IMU 28V .8KC 1 PCT 0 DEG SUP RMS	AP	3	1 S/S	0 33.6 VRMS PSA TRAY 2
C	G1202	V IMU 28V .8KC 5 PCT 90DEG SUP RMS	AP	3	1 S/S	0 33.6 VRMS PSA TRAY 2
C	G1203	V IMU 28V .8KC 5 PCT 0 DEG SUP RMS	AP	3	1 S/S	0 33.6 VRMS PSA TRAY 2
C	G1204	V CDU 28V .8KC 5PCT-90 DEG SUP RMS	AP	3	1 S/S	0 33.6 VRMS PSA TRAY 10
C	G1205	B PH DIFF IMU 1-5 PCT 0--90 DEG	P	3	1 S/S	-135 -45 DEG PSA TRAY 2
C	G1207	B PH DIFF IMU 5-5 PCT -90-0 DEG	P	3	1 S/S	-135 -45 DEG PSA TRAY 2
C	G1209	B PH DIFF CCU 5P 90D IMU 1P 0 DEG	P	3	1 S/S	-135 -45 DEG PSA TRAY 10
C	G1210	V OPTX 800 CPS DRIVE	A	3		PSA TRAY 6
C	G1211	V OPTX 28V .8KC 1PCT 0 DEG SUP RMS	AP	3	1 S/S	0 33.6 VRMS PSA TRAY 6
C	G1212	V OPTX 28V .8KC 5 PCT -90D SUP RMS	AP	3	1 S/S	0 33.6 VRMS PSA TRAY 6
C	G1216	B PH DIFF OPTX 1-5 PCT 0--90 DEG	P	3	1 S/S	-135 -45 DEG PSA TRAY 6
C	G1220	B PH DIFF OPTX 1PCT IMU 5 PCT	AP	3	1 S/S	+45 DEG
C	G1300	V IMU 3200 CPS DRIVE	A	3		PSA TRAY 1
C	G1301	V IMU 2V 3200 CPS SUPPLY RMS	AP	3	1 S/S	0 5 VRMS PSA TRAY 1
C	G1302	V 20V 3.2KC SQ WAVE SUPPLY RMS	AP	3	1 S/S	0 25 VRMS PSA TRAY 1
C	G1304	V IMU 2V 3200 CPS SUPPLY	A	3		



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SUBSYSTEM		APOLLO CM / SM BLOCK I		MEASUREMENT LIST			
MEAS.	ID	MEASUREMENT DESCRIPTION	SPACECRAFT	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE
			17	DISP GSE SYRO	LOW	HIGH	LOCATION/REMARKS
C	G1306	B PHASE DIFF IMU 2V 3.2KC AGC SYNC		P	3	1	S/S -45 +45 DEG PSA TRAY 1
C	G1307	V IMU 2V 3200 CPS SUPPLY		FM	3		
C	G1400	V IMU 2V 25.6KC SUPPLY IN PH		AP	3	1	S/S 0 3 VRMS PSA TRAY 2
C	G1401	V OPTX 2V 25.6KC SUPPLY IN PH		AP	3	1	S/S 0 3 VRMS PSA TRAY 2
C	G1402	B PH DIFF IMU 25.6KC OPTX 25.6KC		AP	3	1	S/S 0 +180 DEG
C	G1500	V +28 VDC BUS 1		AP	3	1	S/S 0 35 VDC PSA TRAY 10
+C	G1501	V +28 VDC BUS 1 NOISE RMS		P	3	1	S/S 0 2 VRMS PSA TRAY 10
C	G1502	X +28 VDC BUS 1 NOISE PEAKS		P	3	10	S/S GLITCH EVENT PSA TRAY 10
C	G1503	X IMU +28 VDC OPERATE	PCME	2 X 10	S/S		OPRT EVENT PSA TRAY 10
C	G1510	V +28 VDC BUS 2		AP	3	1	S/S 0 35 VDC PSA TRAY 10
C	G1511	V +28 VDC BUS 2 NOISE RMS		P	3	1	S/S 0 2 VRMS PSA TRAY 10
C	G1512	X +28 VDC BUS 2 NOISE PEAKS	PCME	P 3	10	S/S	GLITCH EVENT PSA TRAY 10
C	G1513	X IMU +28 VDC STANDBY		2 X 10	S/S		SIBY EVENT PSA TRAY 10
C	G1520	V +28 VDC BUS 3		AP	2	1	S/S 0 35 VDC PSA TRAY 10
C	G1521	V +28 VDC BUS 3 NOISE RMS		P	3	1	S/S 0 2 VRMS PSA TRAY 10
C	G1522	X +28 VDC BUS 3 NOISE PEAKS	PCME	P	3	10	S/S GLITCH EVENT PSA TRAY 10
C	G1523	X AGC +28 VDC		2	10	S/S	ON EVENT PSA TRAY 10



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APOLLO CSM BLOCK I MEASUREMENT LIST  
SUBSYSTEM ID MEASUREMENT DESCRIPTION IMAR MCPL RESPONSE DATA RANGE LOCATION/REMARKS

SUBSYSTEM	SPACECRAFT	VEH.				
MEAS.	ID	DESCRIPTION	IMAR	MCPL RESPONSE	DATA RANGE	LOCATION/REMARKS
C G1530	V +28 VDC BUS 4		AP	3 1	S/S 0	35 VDC PSA TRAY 10
C G1531	V +28 VDC BUS 4 NOISE RMS		P	3 1	S/S 0	2 VRMS PSA TRAY 10
C G1532	X +28 VDC BUS 4 NOISE PEAKS		P	3 10	S/S	GLITCH EVENT PSA TRAY 10
C G1533	X OPTRX +28 VDC	PCME		2 10	S/S	ON EVENT PSA TRAY 10
C G200C	V X PIPA SG OUTPUT RMS		AP	3 1	S/S 0	1.0 VRMS PSA TRAY 3
C G2002	V X PIPA SG OUTPUT QUAD		P	3 1	S/S -0.6 +0.6	VRMS PSA TRAY 3
C G2003	V X PIPA PVR		A	3		PSA TRAY 3
C G2004	C X PIPA TORQUE CURRENT CALIBRATE		A	3		PSA TRAY 3
C G2005	C X PIPA TORQUE CURRENT MONITOR		A	3		PSA TRAY 3
C G2011	V X PIPA SG OUTPUT		FM	3		
C G2012	V X PIPA POS PULSE COUNT		A	3		
C G2013	V X PIPA NEG PULSE COUNT		A	3		
C G2020	V Y PIPA SG OUTPUT RMS		AP	3 1	S/S 0	1.0 VRMS PSA TRAY 3
C G2022	V Y PIPA SG OUTPUT QUAD		P	3 1	S/S -0.6 +0.6	VRMS PSA TRAY 3
C G2023	V Y PIPA PVR		A	3		PSA TRAY 3
C G2024	C Y PIPA TORQUE CURRENT CALIBRATE		A	3		PSA TRAY 3
C G2025	C Y PIPA TORQUE CURRENT MONITOR		A	3		PSA TRAY 3



APJ110C A P C L L O C M / S M B L O C K I		M E A S U R E M E N T L I S T				VL-01	
SUBSYSTEM GUIDANCE AND NAVIGATION		SPACECRAFT 17				SEPT 19, 1966 VEH PAGE NO. 42	
MEAS.	ID	MEASUREMENT DESCRIPTION	IM/IR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
						LOW HIGH UNITS	
C	G2031 V Y	PIPA SG OUTPUT	FM	3			
C	G2032 X Y	PIPA POS PULSE COUNT		A	3		
C	G2033 V Y	PIPA NEG PULSE COUNT		A	3		
C	G2040 V Z	PIPA SG OUTPUT RMS	P	3	1.00 S/S	0 1.0 VRMS	PSA TRAY 4
C	G2042 V Z	PIPA SG OUTPUT QUAD	P	3	1 S/S	+0.6 -0.6 VRMS	PSA TRAY 4
C	G2043 Y Z	PIPA PYR	A	3			PSA TRAY 4
C	G2044 C Z	PIPA TORQUE CURRENT CALIBRATE		A	3		PSA TRAY 4
C	G2045 C Z	PIPA TORQUE CURRENT MONITOR		A	3		PSA TRAY 4
C	G2051 V Z	PIPA SG OUTPUT	FM	3			
C	G2052 X Z	PIPA POS PULSE COUNT		A	3		
C	G2053 V Z	PIPA NEG PULSE COUNT		A	3		
C	G2100 X Y	IRIG +COMMANDS COUNT		A	3		PSA TRAY 4
C	G2101 X Y	IRIG -COMMANDS COUNT		A	3		PSA TRAY 4
C	G2102 V Y	IRIG PYR		A	3		PSA TRAY 4
C	G2103 C Y	IRIG TORQUE CURRENT CALIBRATE		A	3		PSA TRAY 4
C	G2104 C Y	IRIG TORQUE CURRENT MONITOR		A	3		PSA TRAY 4
C	G2106 V IGA SERVO ERROR			A	3		PSA TRAY 1



APJ110C A P C L L O _ C M / S M B L O C K I		M E A S U R E M E N T L I S T					
SUBSYSTEM GUIDANCE AND NAVIGATION	SPACECRAFT	17					
MEAS.	ID	MEASUREMENT DESCRIPTION	FM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
						LOW HIGH UNITS	
C	G2107	V IGA SERVO ERROR IN PHASE	PCM	P 3 1*	S/S	-2.5 +2.5 VRMS	PSA TRAY 1
C	G2108	V IGA SERVO ERROR QUAD	PCM	P 3 1	S/S	-3.0 +3.0 VRMS	PSA TRAY 1
C	G2110	V IGA TORQUE MOTOR INPUT	PCM	P 3 10	S/S	-8.0 +8.0 VDC	PSA TRAY 1
C	G2111	V IGA SERVO TEST INPUT	PCM	A 3			PSA TRAY 1
C	G2112	H IGA 1X RES OUTPUT SINE IN PHASE	PCM	P 2 X 10	S/S	0 360 DEG	
C	G2113	H IGA 1X RES OUTPUT COS IN PHASE	PCM	P 2 X 10	S/S	0 360 DEG	
C	G2117	V IGA SERVO ERROR IN PHASE	PCM	P 2 100	S/S	-1.0 +1.0 VRMS	
C	G2130	X Z IRIG +COMMANDS COUNT	PCM	A 3			PSA TRAY 4
C	G2131	X Z IRIG -COMMANDS COUNT	PCM	A 3			PSA TRAY 4
C	G2132	V Z IRIG PVR	PCM	A 3			PSA TRAY 4
C	G2133	C Z IRIG FORQUE CURRENT CALIBRATE	PCM	A 3			PSA TRAY 4
C	G2134	C Z IRIG FORQUE CURRENT MONITOR	PCM	A 3			PSA TRAY 4
C	G2135	V Z IRIG PRE AMP OUTPUT QUAD	PCM	AP 3 1	S/S	-0.25 +0.25 VRMS	PSA TRAY 5
C	G2136	V MGA SERVO ERROR	PCM	A 3			PSA TRAY 1
C	G2137	V MGA SERVO ERROR IN PHASE	PCM	P 3 1*	S/S	-2.5 +2.5 VRMS	PSA TRAY 1
C	G2138	V MGA SERVO ERROR QUAD	PCM	P 3 1	S/S	-3.0 +3.0 VRMS	PSA TRAY 4
C	G2140	V MGA TORQUE MOTOR INPUT	PCM	P 3 10	S/S	-8.0 +8.0 VDC	PSA TRAY 4



## APJ110C A P O L L E C C M / S M B L O C K I M E A S U R E M E N T L I S T VL-01

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MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
					LOW	HIGH	
C G2141 V MGA SERVO TEST INPUT		A	3				PSA TRAY 4
C G2142 H MGA 1X RES OUTPUT SINE IN PHASE	PCM		2 X 10	S/S	0	360 DEG	PSA TRAY 4
C G2143 H MGA 1X RES OUTPUT COS IN PHASE	PCM	A	2	10	S/S	0	360 DEG PSA TRAY 10
C G2147 V MGA SERVO ERROR IN PHASE	PCM		2	100	S/S	-1.0 +1.0	VRMS
C G2160 X X IRIG +COMMANDS COUNT		A	3				PSA TRAY 4
C G2161 X X IRIG -COMMANDS COUNT		A	3				PSA TRAY 4
C G2162 V X IRIG PVR		A	3				PSA TRAY 3
C G2163 C X IRIG TORQUE CURRENT CALIBRATE		A	3				PSA TRAY 3
C G2164 C X IRIG TORQUE CURRENT MONITOR		A	3				PSA TRAY 3
C G2165 V X IRIG PRE AMP OUTPUT QUAD		AP	3	1	S/S	-0.25 +0.25	VRMS PSA TRAY 5
C G2166 V OGA SERVO ERROR RMS		A	3				PSA TRAY 1
C G2167 V OGA SERVO ERROR IN PHASE		P	3	1*	S/S	-2.5 +2.5	VRMS PSA TRAY 1
C G2168 V OGA SERVO ERROR QUAD		P	3	1	S/S	-3.0 +3.0	VRMS PSA TRAY 1
C G2170 V OGA TORQUE MOTOR INPUT	PCM		2	10	S/S	-8.0 +8.0	VDC PSA TRAY 1
C G2171 V OGA SERVO TEST INPUT		A	3				PSA TRAY 1
C G2172 H CGA 1X RES OUTPUT SINE IN PHASE	PCM		2 X 10	S/S	0	360 DEG	PSA TRAY 1
C G2173 H CGA 1X RES OUTPUT COS IN PHASE	PCM		2 X 10	S/S	0	360 DEG	PSA TRAY 1



## APJ110C A P O L L O C M / S M B L O C K I M E A S U R E M E N T L I S T VL-01

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MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			DSP GSE SYNO	LOW	HIGH	UNITS	
C	G2177	V OGA SERVJ ERRUR IN PHASE	PCM	2	100	S/S -1.0 +1.0	VRMS
C	G2201	V IGA CDU FAIL SIGNAL	AP	3	1	S/S 0 5	VRMS PSA TRAY 6
C	G2202	X IGA CDU +DELTA THETA	A	3			PSA TRAY 5
C	G2203	X IGA CDU -DELTA THETA	A	3			PSA TRAY 5
C	G2204	V IGA CDU 1.6X RES ERROR IN PHASE	AP	3	10	S/S -5.0 +5.0	VRMS PSA TRAY 6
C	G2205	V IGA CDU 1.6X RES ERROR RMS	AP	3	1*	S/S	PSA TRAY 5
C	G2206	V IGA CDU 1X RES EPUR IN PHASE	PCM	2	10	S/S -7.0 +7.0	VRMS PSA TRAY 1
C	G2207	V IGA CDU 1X RES ERROR RMS	AP	3	1	S/S 0 5.0	VRMS
C	G2209	V SCS PITCH IN PHASE	AP	3	1*	S/S -10 +10	DEG PSA TRAY 7
C	G2214	V 1G DAC ERROR SIGNAL IN PHASE	AP	3	1*	S/S 0 6.0	VRMS PSA TRAY 5
C	G2231	V MGA CDU FAIL SIGNAL RMS	AP	3	1	S/S 0 5	VRMS PSA TRAY 6
C	G2232	X MGA CDU +DELTA THETA	A	3			PSA TRAY 5
C	G2233	X MGA CDU -DELTA THETA	A	3			PSA TRAY 5
C	G2234	V MGA CDU 1.6X RES ERROR IN PHASE	AP	3	10	S/S -5.0 +5.0	VRMS PSA TRAY 6
C	G2235	V MGA CDU 1.6X RES ERROR RMS	AP	3	1	S/S 0 5.0	VRMS
C	G2236	V MGA CDU 1X RES ERROR IN PHASE	PCM	2	10	S/S -7.0 +7.0	VRMS PSA TRAY 1
C	G2237	V MGA CDU 1X RES ERROR RMS	AP	3	1	S/S 0 5.0	VRMS



MEASUREMENT LIST							VL-01
SUBSYSTEM		MEASUREMENT DESCRIPTION	TM/IR	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS	
MEAS.	ID	ACCESSIBILITY	DISP GSE SYRO	LOW	HIGH	UNLIS	
	C G2239 V SCS YAW BODY AXIS IN PHASE	AP	3 1*	S/S	-10	+10 DEG	PSA TRAY 7
	C G2241 V SCS YAW OFFSET AXIS IN PHASE	AP	3 1*	S/S	-10	+10 DEG	PSA TRAY 6
	C G2244 V MG. DAC. ERROR SIGNAL IN PHASE	AP	3 1*	S/S	0	6.0 VRMS	PSA TRAY 5
	C G2261 V OGA CDU FAIL SIGNAL RMS	AP	3 1	S/S	0	5.0 VRMS	PSA TRAY 6
	C G2262 X OGA CDU +DELTA THETA	A	3				PSA TRAY 5
	C G2263 X OGA CDU -DELTA THETA	A	3				PSA TRAY 5
	C G2264 V OGA CDU 16X RES. ERROR IN PHASE	AP	3 10	S/S	-5.0	+5.0 VRMS	PSA TRAY 6
	C G2265 V OGA CDU 16X RES. ERROR RMS	AP	3 1	S/S	0	0.5 VRMS	
	C G2266 V OGA CDU 1X RES. ERROR IN PHASE	PCM	2 10	S/S	-7.0	+7.0 VRMS	PSA TRAY 1
	C G2267 V OGA CDU 1X RES. ERROR RMS	AP	3 1	S/S	0	5.0 VRMS	
	C G2269 V SCS ROLL BODY AXIS IN PHASE	AP	3 1*	S/S	-10	+10 DEG	PSA TRAY 7
	C G2271 V SCS ROLL OFFSET AXIS IN PHASE	AP	3 1*	S/S	-10	+10 DEG	PSA TRAY 7
	C G2274 V OG DAC ERROR SIGNAL IN PHASE	AP	3 1*	S/S	0	6.0 VRMS	PSA TRAY 5
	C G2390 T PIPA TEMP	PCM	2 X 1	S/S	125	135 DEG F	
	C G2301 T IRIG TEMP	PCM+	2 X 1	S/S	128.5	138.5 DEG F	
	C G2302 C IMU HEATER CURRENT	PCM+	2 X 1	S/S	0	2 AMP	PSA TRAY 7
	C G2303 C IMU BLOWER CURRENT	PCM+	2 X 1	S/S	0	1000 MADC	PSA TRAY 7



APJ110C A P C T L L O C M / S M . . . B L O C K I . . . M E A S U R E M E N T _ L I S T		VL-01	
SUBSYSTEM	MEASUREMENT DESCRIPTION	TM/TR	DATA RANGE
GUIDANCE AND NAVIGATION	ACCESSIBILITY MCPF RESPONSE	DISP GSE SYRO	HIGH UNITS
C G2304 V IMU TEMP CONTROL BRIDGE SUPPLY	AP 3 1 S/S	0 30 VDC	PSA TRAY 7
C G2305 V IMU TEMP CONTROL AMP OUTPUT	A 3		PSA TRAY 7
C G3000 X TRUN CDU DECODER +DELTA TH	A 3		PSA TRAY 7
C G3001 X TRUN CDU DECODER -DELTA TH	A 3		PSA TRAY 7
C G3002 X SHAFT CDJ DECODER +DELTA TH	A 3		PSA TRAY 7
C G3003 X SHAFT CDU DECODER -DELTA TH	A 3		PSA TRAY 7
C G3101 V SXT TRUN 16X RES ERROR IN PHASE	AP 3 10 S/S	-2.0 +2.0 VRMS	PSA TRAY 9
C G3103 V SXT TRUN MOTOR DRIVE QUAD	AP 3 1 S/S	-10.0 +10.0 VRMS	PSA TRAY 9
C G3104 V SXT TRUN MCA INPUT IN PHASE	PCM 2 10 S/S		
C G3105 V SXT TRUN TACH OUTPUT	PCM 2 10 S/S		
C G3111 V SXT SHAFT 16X RES ERROR IN PHASE	AP 3 10* S/S	-2.0 +2.0 VRMS	PSA TRAY 9
C G3113 V SXT SHAFT MOTOR DRIVE QUAD	A 3	-10.0 +10.0 VRMS	PSA TRAY 9
C G3114 V SXT SHAFT MDA INPUT IN PHASE	PCM 2 10 S/S		
C G3115 V SXT SHAFT TACH OUTPUT	PCM 2 10 S/S		
C G3120 V SCT TRUN 1X RES ERROR IN PHASE	AP 3 10* S/S	-1.2 +1.2 VRMS	PSA TRAY 9
C G3124 V SCT SHAFT TACH FEEDBACK IN PH	AP 3 10 S/S		
C G3131 V SCT SHAFT 1X RES ERROR IN PHASE	AP 3 10* S/S	-1.2 +1.2 VRMS	



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MEAS. ID	MEASUREMENT DESCRIPTION	IMU/IR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
		DISP	GSE	SYRO	LOW	HIGH UNITS
C G3134 V SCT TRUN TACH FEEDBACK IN PH		AP	3	10	S/S	
C G3141 V TRUN CDU 16X RES ERROR IN PHASE	PCM		2	10	S/S	
C G3201 V TRUN CDU MOTOR DRIVE QUAD		AP	3	1	S/S	-10.0 +10.0 VRMS PSA TRAY 8
C G3206 V TRUN CDU TACH OUTPUT IN PH		AP	3	10*	S/S	-10.0 +10.0 VRMS PSA TRAY 8
C G3211 V SXT SHAFT 16X RES ERROR IN PHASE	PCM		2	10	S/S	
C G3220 V SHAFT CDU MOTOR DRIVE IN PHASE		AP	3	10	S/S	-10.0 +10.0 VRMS PSA TRAY 8
C G3221 V SHAFT CDU MOTOR DRIVE QUAD		AP	3	1	S/S	-10.0 +10.0 VRMS PSA TRAY 8
C G3226 V SHAFT CDU TACH OUTPUT IN PH		AP	3	10*	S/S	-10.0 +10.0 VRMS PSA TRAY 8
C G4005 X 800 PPS SET		A	3			PSA TRAY 2
C G4006 X 800 PPS RESET		A	3			PSA TRAY 2
C G4007 X 3200 PPS SET		A	3			PSA TRAY 1
C G4008 X 3200 PPS RESET		A	3			PSA TRAY 1
C G4010 X 25.6 KPPS SET		A	3			PSA TRAY 2
C G4011 X 25.6 KPPS RESET		A	3			PSA TRAY 2
C G4300 TAGC TEMP MONITOR	PCM		2	1	S/S	+20 +119 DEG F
C G5000 X PIPA FAIL	PCM	X		1 X 10	S/S	FAIL EVENT
C G5001 X IMU FAIL	PCM	X		1 X 10	S/S	FAIL EVENT



APJ110C A P Q L L C _ C M / S M _ B L O C K _ 1 M E A S U R E M E N T _ L I S T _ VL-01											
SUBSYSTEM		SPACECRAFT		MEASUREMENT		RESPONSE		DATA RANGE		LOCATION/REMARKS	
MEAS.	ID	MEASUREMENT	DESCRIPTION	TMR/TR	ACCESSIBILITY	MCPF	DISP	GSE	SYRO		
C	G5002	X	CDU FAIL	PCME	X	1	X	10	S/S	FAIL	EVENT
C	G5003	X	GIMBAL LOCK WARNING	PCME	X	1	X	10	S/S	FAIL	EVENT
C	G5005	X	ERROR DETECT	PCME	X	1	1	10	S/S	ERROR	EVENT
C	G5C06	X	1MU TEMP LIGHT	PCME	X	1	1	10	S/S	OUT BD	EVENT
C	G5007	X	ZERO ENCODER LIGHT	PCME	X	1	1	10	S/S	ZEROING	EVENT
C	G5008	X	IMU DELAY LIGHT	PCME	X	1	1	10	S/S	DELAY	EVENT
C	G5020	X	AGC ALARM 1 (PROGRAM)	PCME	X	1	1	10	S/S	PROG	EVENT
C	G5021	X	AGC ALARM 2 (AGC ACTIVITY)	PCME	X	1	1	10	S/S	ACTIVITY	EVENT
C	G5C22	X	AGC ALARM 3. (TMR)	PCME	X	1	1	10	S/S		
C	G5023	X	ALARM 4 (PRJG CK FAIL)	PCME	X	1	1	10	S/S	FAIL	EVENT
C	G5024	X	AGC ALARM 5 (SCALAR FAIL)	PCME	"	X	1	10	S/S	FAIL	EVENT
C	G5025	X	AGC ALARM 6 (PARITY FAIL)	PCME	"	X	1	10	S/S	FAIL	EVENT
C	G5026	X	AGC ALARM 7 (COUNTER FAIL)	PCME	X	1	1	10	S/S	FAIL	EVENT
C	G5027	X	AGC ALARM 8 (KEY RELEASE)	PCME	X	1	1	10	S/S	RELEASE	EVENT
C	G5028	X	AGC ALARM 9 (RIJPT LOCK)	PCME	"	X	1	10	S/S	LOCK	EVENT
C	G5029	X	AGC ALARM 10 (TC TRAP)	PCME	X	1	1	10	S/S	TRAP	EVENT
C	G5030	X	COMPUTER POWER FAIL LIGHT	PCME	X	1	X	10	S/S	FAIL	EVENT



MEASUREMENT LIST						
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SUBSYSTEM	SPACECRAFT	17				
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MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			TM/TR	DISP GSE SYRO	LOW HIGH	UNITS
C	G5100	H 2X TRUN ANGLE CDU DISPLAY	X	X	1	
C	G5101	H SHAFT ANGLE CDU DISPLAY	X	X	1	
C	G5102	H ROLL ANGLE CDU DISPLAY	X	X	1	
C	G5103	H PITCH ANGLE CDU DISPLAY	X	X	1	
C	G5104	H YAW ANGLE CDU DISPLAY	X	X	1	
C	G5200	X ZERO ENCODE MODE SWITCH	X	X	1	
C	G5201	X CCARSE ALIGN MODE SWITCH	X	X	1	
C	G5202	X FINE ALIGN MODE SWITCH	X	X	1	
C	G5203	X CDU MANUAL MODE SWITCH	X	X	1	
C	G5204	X ATTITUDE CONTROL MODE SWITCH	X	X	1	
C	G5205	X ENTRY MODE SWITCH	X	X	1	
C	G5206	X TRANSFER SWITCH	X	X	1	
C	G5300	H ATTITUDE ERROR DISPLAY (R,P,Y)	X	X	1	
C	G5400	X IMU TEMP CCNTROL MODE SWITCH	X	X	1	
C	G5500	X SXI SPEED SWITCH	X	X	1	
C	G5501	X OPTX MODE SWITCH	X	X	1	
C	G5502	X SLAVE SCT SWITCH	X	X	1	



MEAS. ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY		MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
		IMU	DISP			
C G5503 X MARK SWITCH	X	X				
C G6000 P IMU PRESSURE	PCM	A	2 1	S/S	0	25 PSIA
C G6920 T PSA TEMP 1 TRAY 3	PCM		2 1	S/S	+20 +119 DEG F	
C G6021 T PSA TEMP 2 TRAY 2	PCM		2 1	S/S	+20 +119 DEG F	
C G6022 T PSA TEMP 3 TRAY 4	PCM		2 1	S/S	+20 +119 DEG F	
C G9000 X AGC PROGRAM DISPLAY	X	X	1			
C G9001 X AGC NOUN DISPLAY	X	X	1			
C G9002 X AGC VERB DISPLAY	X	X	1			
C G9003 X AGC DISPLAY 1	X		1			
C G9004 X AGC DISPLAY 2	X		1			
C G9005 X AGC DISPLAY 3	X		1			



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## MEASUREMENT LIST

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MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPIF RESPONSE	DATA RANGE		LOCATION/REMARKS
					TM/TR	DISP GSE SYRO	
C H0001	V ECA P	GFX 1 POWER 26 VAC PH A	A	3	.....	0 +26.8 VRMS	
C H0005	V ECA P	VOLTAGE LEVEL +40 VDC	A	3	.....	0 +42 VDC	
C H0006	V ECA P	VOLTAGE LEVEL -40 VDC	A	3	-42	0 VDC	
C H0007	V ECA P	VOLTAGE LEVEL +20 VDC	A	3	+0	+22 VDC	
C H0008	V ECA P	VOLTAGE LEVEL -20 VDC	A	3	-22	+0 VDC	
C H0012	V -4 VDC	ECA P	A	3	-5	0 VDC	
C H0013	V +31.9 VDC	ECA P	A	3	.....	0 +34.9 VDC	
C H0014	V AC	POWER GROUND ECA P	A	3	.....	GND	
C H0019	V DC	POWER GROUND ECA P	A	3	.....	GND	
C H0020	H G-N	PITCH ERROR DEMOD IN	AP	3	1	S/S -10 +10 DEG	
C H0024	R PITCH RATE	PCM	AP	3	50	S/S -25 +25 DEG/S	
C H0026	V PITCH 1	POS FEEDBACK DEMOD OUT	AP	3	100	S/S +1.70 -1.70 DEG	
C H0027	V PITCH 2	VEL GEN DEMOD OUT	AP	3	5.0	S/S -20.0 +20.0 DEG/S	
C H0029	R PITCH 2	VEL GEN DEMOD IN	A	3	.....	-20 +20 DEG/S	
C H0029	V PITCH 2	POS FEEDBACK DEMOD OUT	AP	3	50	S/S +0.50 -0.50 DEG	
C H0030	H PITCH 2	POS FEEDBACK DEMOD IN	A	3	.....	-7.0 +7.0 DEG	
C H0031	H PITCH 1	POS FEEDBACK DEMOD IN	A	3	.....	-7.0 +7.0 DEG	



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MEAS.	ID	MEASUREMENT DESCRIPTION	TIME/IR	ACCESSIBILITY	MCPLF RESPONSE	DATA RANGE	LOCATION/REMARKS	
							DISP	GSE
				A	3		-20	+20 DEG/S
C	H0032	R PITCH 1 VEL GEN DEMOD IN		AP	3	200	S/S	-1.75 +1.75 VDC
C	H0033	V PITCH 1 VEL GEN DEMOD OUT		AP	3	50	S/S	-9.50 +9.50 DEG
C	H0034	H PITCH POS FEEDBACK IN	PCM	AP	3	50	S/S	-25 VDC
C	H0036	V PTV INTEGRATOR AMP OUT		AP	3	10	S/S	-25 +25 VDC
C	H0037	V PTV SERVO 1 + CLUTCH VOLTS		AP	3	50	S/S	+0 +25 VDC
C	H0038	V PTV SERVO 1 - CLUTCH VOLTS		AP	3	50	S/S	+0 -25 VDC
C	H0039	V PTV DIFF CLUTCH VOLTS SERVO 1		A	3			-5.5 +5.5 VDC
C	H0040	V PTV SERVO 2 + CLUTCH VOLTS		AP	3	50	S/S	+0 +25 VDC
C	H0041	V PTV SERVO 2 - CLUTCH VOLTS		AP	3	50	S/S	+0 -25 VDC
C	H0042	V PTV DIFF CLUTCH VOLTS SERVO 2		A	3			-5.5 +5.5 VDC
C	H0045	V PITCH RATE GYRO NULL OUT		AP	3	1	S/S	-0.5 +0.5 VRMS
C	H0047	C PTV DIFF CLUTCH CURRENT COMB	PCM	AP	3	50	S/S	+850 -850 MADC
C	H0048	X PITCH MIN IMPULSE CONTROL		A	3			EVENT
C	H0050	R PITCH RATE ERROR AMP OUT	PCM	A	2	50	S/S	-6.25 +6.25 DEG/S
C	H0053	V PTV GIMBAL POS. COMD		AP	3	1	S/S	-22.5 +22.5 VDC
C	H0060	V PITCH TOTAL ERROR AMP OUT		AP	3	10	S/S	-25 +25 VDC
C	H0061	X + PITCH ROTATION LOGIC IN		A	3			EVENT



APPLIC AP C L L O C M / S M B L O C K 1 MEASUREMENT LIST VL-01						
SUBSYSTEM STABILIZATION AND CONTROL	SPACECRAFT	17	SEPT 19, 1966	VEH		
MEAS.	ID	MEASUREMENT DESCRIPTION	IM/IR	ACCESSIBILITY MCPF RESPONSE	DATA RANGE	LUCATION/REMARKS
C	H0062	X - PITCH ROTATION LOGIC IN	A	3	-20 +20	EVENT
C	H0067	V P INTEGRATOR/ATT ERROR SUMMING	PCM+	A 2 10	S/S -2.5 +2.5	VDC
C	H0070	H PITCH ATT ERROR AMP OUT		A 3	-12.5 +12.5	DEG
C	H0075	H PITCH SCS ATT ERROR	PCM+	2 X 10	S/S -20 +20	VDC
C	H0076	V PITCH AG PRE AMP OUT		AP 3 10	S/S -3.0 +3.0	VRMS
C	H0077	V PITCH INTEGRATOR IN		A 3	-10 +10	VDC
C	H0081	X ECA P TRANSLATION STICK +X COMD		A 3		EVENT
C	H0082	X ECA P TRANSLATION STICK -X COMD		A 3		EVENT
C	H0085	X PITCH/X SOLENOID DRIVERS DISABLE	AP	2 1	S/S DISABLE	EVENT
C	H0087	X + PITCH/+X SOLENOID DRIVER OUT	PCME	2 200	S/S	FIREENABLE EVENT
C	H0088	X - PITCH/+X SOLENOID DRIVER OUT	PCME	2 200	S/S	FIREENABLE EVENT
C	H0089	X + PITCH/-X SOLENOID DRIVER OUT	PCME	2 200	S/S	FIREENABLE EVENT
C	H0090	X - PITCH/-X SOLENOID DRIVER OUT	PCME	2 200	S/S	FIREENABLE EVENT
C	H0100	X G-N DV MODE CONTROL	PCHE	1 X 10	S/S	GN DV EVENT
C	H0101	X G-N ALT MODE CONTROL	PCHE	X 1 X 10	S/S	GN ALT EVENT
C	H0102	X G-N ENTRY MODE CONTROL	PCME	X 1 X 10	S/S	GN ENT. EVENT
C	H0103	X MONITOR MODE CONTROL	PCME	X 1 X 10	S/S	MON EVENT



MEASUREMENT LIST						
MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPI RESPONSE	DATA RANGE
			DISP GSE SYRO	LOW	HIGH	UNITS
C	H0200	X P RATE IN TRANSFER RELAY		A	3	EVENT
C	H0201	X P G-N ATT IN RELAY		A	3	EVENT
C	H0202	X P AG ATT IN RELAY		A	3	EVENT
C	H0203	X P .05 G SWITCH RELAY		A	3	EVENT
C	H0204	X P ENTRY GAIN RELAY		A	3	EVENT
C	H0205	X P MINIMUM IMPULSE ENABLE RELAY		A	3	EVENT
C	H0209	X P TVC ELECT TRANSFER RELAY		AP	3	S/S TRANS. EVENT
C	H0214	X ENGINE IGNITION RELAY		AP	3	S/S IGN. EVENT
C	H0217	X P AUTO-INTERRUPT RELAY		AP	3	S/S INTFRPL EVENT
C	H0218	X P PSEUDO RATE CUTOFF RELAY		A	3	EVENT
C	H0220	V ECA P GPI 1 POWER +20 VDC		A	3	0 +22.4 VDC
C	H0221	V ECA P GPI 1 POWER -20 VDC		A	3	-22.4 +0 VDC
C	H0224	V ECA P TVC 1 POWER +30 VDC		A	3	+0 +33 VDC
C	H0225	V ECA P TVC 1 POWER -30 VDC		A	3	-33 +0 VDC
C	H0226	V ECA P TVC 1 POWER +35 VDC		A	3	+0 +38.5 VDC
C	H0227	V ECA P TVC 2 POWER +35 VDC		A	3	+0 +38.5 VDC
C	H0228	V ECA P TVC 2 POWER +30 VDC		A	3	+0 +33 VDC



APJ10C A P O L L E C M I S S I O N B L O C K I M E A S U R E M E N T L I S T YL-01

SUBSYSTEM  
STABILIZATION AND CONTROL

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MEASUREMENT ID MEASUREMENT DESCRIPTION

ACCESSIBILITY IMIR DISP GSE SYRO MCPIF RESPONSE LOCATION/REMARKS

MEAS.	ID	DESCRIPTION	IMIR	DISP	GSE	SYRO	MCPIF RESPONSE	DATA RANGE	LOCATION/REMARKS
C	H0229 V	ECA P TVC 2 POWER -30 VDC	A	3			-33	+0 VDC	
C	H0230 V	26V 400 CPS PHASE A ECA P	A	3			0	+26.8 VRMS	
C	H0400 V	PITCH SIG GROUND	A	3			GND		
C	H0401 V	AGAP-RGP SIG GROUND	A	3			GND		
C	H0402 V	ECA P TVC 1 PWR +35 VDC RETURN	A	3			GND		
C	H0403 V	ECA P TVC 2 PWR +35 VDC RETURN	A	3			GND		
C	H0411 V	ECA P GPX 2 POWFR 26 VAC PH A	A	3			0	+26.8 VRMS	
C	H0413 V	PTV LIMITER AMP OUT	AP	3	50	S/S	-25	+25 VDC	
C	H0613 V	PTV LIMITER AMP NULL	AP	3	1	S/S	-2.5	+2.5 VDC	
C	H0660 V	PITCH TOTAL ERROR AMP NULL	AP	3	1	S/S	-2.5	+2.5 VDC	
C	H1001 V	ECA Y GPX 1 POWER 26 VAC PH A	A	3			0	+26.8 VRMS	
C	H1005 V	ECA Y VOLTAGE LEVEL +40 VDC	A	3			+0	+42 VDC	
C	H1006 V	ECA Y VOLTAGE LEVEL -40 VDC	A	3			-42	+0 VDC	
C	H1007 V	ECA Y VOLTAGE LEVEL +20 VDC	A	3			+0	+22 VDC	
C	H1009 V	ECA Y VOLTAGE LEVEL -20 VDC	A	3			-22	+0 VDC	
C	H1012 V	-4 VDC ECA Y	A	3			-5	+0 VDC	
C	H1013 V	+31.9 VDC ECA Y	A	3			+0	+34.9 VDC	



## APJ110C A P O L L O C M / S M BLOCK I MEASUREMENT LIST V-01

MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
					DISP	GSE SYRO	
C H1014 V AC POWER GROUND ECA Y			A	3			GND
C H1019 V DC POWER GROUND ECA Y			A	3			GND
C H1020 H G-N YAW ERROR DEMOD IN			AP	3	1	S/S	-10 ... +10 DEG
C H1024 R YAW RATE		PCM			2	50	S/S ... -25 ... +25 DEG/S
C H1026 V YAW 1 POS FEEDBACK DEMOD OUT			AP	3	100	S/S	+5...80 ... +2...40 DEG
C H1027 V YAW 2 VEL GEN DEMOD OUT			AP	3	50	S/S	-20...0 ... +20...0 DEG/S
C H1028 R YAW 2 VEL GEN DEMOD IN			A	3			-20 ... +20 DEG/S
C H1029 V YAW 2 POS FEEDBACK DEMOD OUT			AP	3	50	S/S	+4...50 ... +3...00 DEG
C H1030 H YAW 2 POS FEEDBACK DEMOD IN			A	3			-4 ... +12 DEG
C H1031 H YAW 1 POS FEEDBACK DEMOD IN			A	3			-4 ... +12 DEG
C H1032 R YAW 1 VEL GEN DEMOD IN			A	3			-20 ... +20 DEG/S
C H1033 V YAW 1 VEL GEN DEMOD OUT		PCM			AP	3	200 S/S ... -1.75 ... +1.75 VDC
C H1034 H YAW POS FEEDBACK IN					2	50	S/S ... -5...5 ... +13...5 DEG
C H1036 V YTV INTEGRATOR AMP OUT					AP	3	10 S/S ... -25 ... +25 VDC
C H1037 V YTV SERVO 1 + CLUTCH VOLTS					AP	3	50 S/S ... +0 ... +25 VDC
C H1038 V YTV SERVO 1 - CLUTCH VOLTS					AP	3	50 S/S ... +0 ... -25 VDC
C H1039 V YTV DIFF CLUTCH VOLTS SERVO 1			A	3			-5...5 ... +5...5 VDC



APJ110C. A P O L L O G. M / S. M. H. L. D. C. K. J. MEASUREMENT LIST

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MEAS.	IN	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						LOW	HIGH	
C	H1040	V YTV SERVO 2 + CLUTCH VOLTS	PCM	A	3	50	S/S	+0 +25 VDC
C	H1041	V YTV SERVO 2 - CLUTCH VOLTS	PCM	A	3	50	S/S	+0 -25 VDC
C	H1042	V YTV DIFF CLUTCH VOLTS SERVO 2	PCM	A	3	.....	-5.5 +5.5 VDC	EVENT
C	H1045	V YAW RATE GYRO NULL OUT	PCM	A	3	10	S/S	-0.5 +0.5 VRMS
C	H1047	C YTV DIFF CLUTCH CURRENT COMB	PCM	.....	2	50	S/S	+850 -850 MADC
C	H1048	X YAW MIN IMPULSE CONTROL	PCM	.....	A	3	.....	EVENT
C	H1050	R YAW RATE ERROR AMP OUT	PCM	A	2	50	S/S	-6.25 +6.25 DEG/S
C	H1053	V YTV MAN GIMBAL POSITION COMD	PCM	.....	A	3	1	S/S -22.5 +22.5 VDC
C	H1060	V YAW TOTAL ERROR AMP OUT	PCM	A	3	10	S/S	-25 +25 VDC
C	H1061	X + YAW ROTATION LOGIC IN	PCM	.....	A	3	.....	EVENT
C	H1062	X - YAW ROTATION LOGIC IN	PCM	.....	A	3	.....	EVENT
C	H1067	V Y INTEGRATOR/ATT. ERROR SUMMING	PCM+	A	2	10	S/S	-2.5 +2.5 VDC
C	H1070	H YAW ATT. ERROR AMP OUT	PCM	.....	A	3	.....	-12.5 +12.5 DEG
C	H1072	V ROLL RATE TO YAW DEMOD OUT	PCM	.....	A	3	.....	-3.1 +3.1 VDC
C	H1075	H YAW SCS ATT. ERROR	PCM+	2 X 10	S/S	-20	+20	DEG
C	H1076	V YAW AG PRE AMP OUT	PCM	3	10	S/S	-3.0 +3.0 VRMS	
C	H1077	V YAW INTEGRATOR IN	PCM	3	.....	.....	-1.0 +1.0 VDC	



MEASUREMENT LIST						
MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			T/MIR	DISP GSE SYRO	LOW	HIGH UNITS
C	H1085	X YAW/X SOLENOID DRIVERS DISABLE	PCME	AP 3 1	S/S DISABLE	EVENT
C	H1087	X +YAW/+X SCOLENOID DRIVER OUT	PCME	2 200	S/S	FIREENABLE EVENT
C	H1088	X -YAW/+X SCOLENOID DRIVER OUT	PCME	2 200	S/S	FIREENABLE EVENT
C	H1C89	X +YAW/-X SOLENOID DRIVER OUT	PCME	2 200	S/S	FIREENABLE EVENT
C	H1C90	X -YAW/-X SCOLENOID DRIVER OUT	PCME	2 200	S/S	FIREENABLE EVENT
C	H1100	X SCS DV MODE CONTROL	PCME	1 10	S/S	SCS DV EVENT
C	H1101	X SCS ATT MODE CONTROL	PCME	X 1 X 10	S/S	SCS ATT EVENT
C	H1102	X SCS ENTRY MODE CONTROL	PCME	X 1 X 10	S/S	SCS ENT EVENT
C	H1103	X SCS LOCAL VERTICAL MODE CONTROL	PCME	X 1 X 10	S/S	SCS LV EVENT
C	H1200	X Y RATE IN TRANSFER RELAY		A 3		EVENT
C	H1201	X Y G-N ATT IN RELAY		A 3		EVENT
C	H1202	X Y AG ATT IN RELAY		-A 2		EVENT
C	H1203	X Y .05 G SWITCH RELAY		A 3		EVENT
C	H1204	X Y ENTRY GAIN RELAY		A 3		EVENT
C	H1206	X DEADBAND CHANGE RELAY		A 3		EVENT
C	H1209	X Y TVC ELECT TRANSFER RELAY		AP 3 1	S/S	TRANS EVENT
C	H1217	X Y AUTO INTERRUPT RELAY		AP 3 1	S/S	INTRPT EVENT



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MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			TM/TR DISP GSE SYRO		LOW HIGH	UNITS
		A 3	A 3	A 3	-22.4	+0 +22.4 VDC
C H1218 X Y PSEUDO RATE CUTOUT RELAY		C H1220 V ECA Y GPI 1 POWER +20 VDC	A 3	A 3	-	+0 +20 VDC
C H1221 V ECA Y GPI 1 POWER -20 VDC		C H1224 V ECA Y TVC 1 POWER +30 VDC	A 3	A 3	-	+0 +30 VDC
C H1225 V ECA Y TVC 1 POWER -30 VDC		C H1226 V ECA Y TVC 1 POWER +35 VDC	A 3	A 3	-	+0 +35 VDC
C H1227 V ECA Y TVC 2 POWER +35 VDC		C H1228 V ECA Y TVC 2 POWER +30 VDC	A 3	A 3	-	+0 +30 VDC
C H1229 V ECA Y TVC 2 POWER -30 VDC		C H1230 V 26V 400 CPS PHASE A ECA Y	A 3	A 3	-	+0 +26.8 VRMS
C H1400 V YAW SIG GROUND		C H1401 V AGAP-RGP SIG GROUND	A 3	A 3	-	GND
C H1402 V ECA Y TVC 1 POWER +35 VDC RETURN		C H1403 V ECA Y TVC 2 POWER +35 VDC RETURN	A 3	A 3	-	GND
C H1411 V ECA Y GPX 2 POWER 26 VAC PR A		C H1413 V YTV LIMITER AMP OUT	A 3	A 3	-	0 +26.8 VRMS
C H1613 V YTV LIMITER AMP NULL		C H1613 V YTV LIMITER AMP NULL	AP 3 50	S/S	-25	+25 VDC
			AP 3 1	S/S	-2.5	+2.5 VDC



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M E A S .	I D	M E A S U R E M E N T D E S C R I P T I O N	I M A G E	M C P F R E S P O N S E	D A T A R A N G E	L O W	H I G H	U N I T S
C	H1660	V YAW TOTAL ERROR AMP NULL	AP	3 1 S/S	-2.5 +2.5	VDC		
C	H2005	V ECA R VOLTAGE LEVEL +40 VDC	A	3	+0	+42	VDC	
C	H2006	V ECA R VOLTAGE LEVEL -40 VDC	A	3	-42	+0	VDC	
C	H2007	V ECA R VOLTAGE LEVEL +20 VDC	A	3	+0	+22	VDC	
C	H2009	V ECA R VOLTAGE LEVEL -20 VDC	A	3	-22	+0	VDC	
C	H2012	V -4 VDC ECA R	A	3	-5	+0	VDC	
C	H2013	V +31.9 VDC ECA R	A	3	+0	+34.9	VDC	
C	H2015	V COMBINED AG SMRD LOGIC OUT	PCM	A 2 10 S/S	0	+5	VDC	
C	H2016	F PITCH AG SMRD	AP	3 10 S/S	0	801 CPS		
C	H2017	F YAW AG SMRD	AP	3 10 S/S	0	801 CPS		
C	H2018	F ROLL AG SMRD	AP	3 10 S/S	0	801 CPS		
C	H2019	V DC POWER GROUND ECA R	A	3 10 S/S	0	GND		
C	H2020	H G-N ROLL ERROR DEMOD IN	AP	3 10 S/S	-10	+10	DEG	
C	H2024	R ROLL RATE	PCM	2 50 S/S	-25	+25	DEG/S	
C	H2026	V COMBINED RG SMRD LOGIC OUT	PCM	A 2 10 S/S	0	+5	VDC	
C	H2027	F PITCH RG SMRD	AP	3 10 S/S	0	1601 CPS		
C	H2028	F YAW RG SMRD	AP	3 10 S/S	0	1601 CPS		



APJ110C		A P G I L L C M / S M		B L O C K _ I		M E A S U R E M E N T _ L I S T		VL-01	
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MEAS.	ID	MEASUREMENT	DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS	
C	H2029	F	ROLL RG SWRD	TM/TR	DISP GSE SYRO	LOW	HIGH	UNITS	
C	H2030	V	CUMBNED AG TEMP LOGIC OUT	PCM		2	1	S/S	0 +5 VDC
C	H2045	V	ROLL RATE GYRO NULL OUT	AP	3	10	S/S	-0.5 +0.5 VRMS	
C	H2060	V	RCLL MIN IMPULSE CONTROL	A	3				EVENT
C	H2050	R	RCLL RATE ERPROK AMP OUT	PCM	A	2	50	S/S	+6.25 DEG/S
C	H2070	H	ROLL ATTITUDE ERROR AMP OUT	AP	3	10	S/S	-25 +25	VDC
C	H2061	X	+ ROLL ROTATION LOGIC IN	A	3				EVENT
C	H2062	X	- ROLL ROTATION LOGIC IN	A	3				EVENT
C	H2075	H	ROLL ATTITUDE ERROR AMP OUT	PCM	A	2	10	S/S	-12.5 +12.5 DEG
C	H2075	H	ROLL SCS ATT ERROR	PCM+		2	X 10	S/S	+20 -20 DEG
C	H2076	V	ROLL AG PRE AMP OUT	AP	3	10	S/S	-3.0 +3.0 VRMS	
C	H2081	X	ECA R TRANSLATION STICK +Z COMD	A	3				EVENT
C	H2082	X	ECA R TRANSLATION STICK -Z COMD	A	3				EVENT
C	H2083	X	ECA R TRANSLATION STICK +Y COMD	A	3				EVENT
C	H2084	X	ECA R TRANSLATION STICK -Y COMD	A	3				EVENT
C	H2085	X	R/Z SOLENOID DRIVERS DISABLE 1	AP	3	1	S/S	DISABLE	EVENT
C	H2086	X	R/Y SOLENOID DRIVERS DISABLE 2	AP	3	1	S/S	DISABLE	EVENT



APJ110C A P O L L O C M / S M B L O C K I M E A S U R E M E N T L I S T VL-Q1

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MEAS. ID	MEASUREMENT DESCRIPTION	TM/R DISP GSE SYRO	ACCESSIBILITY	MCPIF RESPONSE	DATA RANGE		LOCATION/REMARKS
					LOW	HIGH	
C H2087 X + ROLL/+Z SOLENOID DRIVER OUT	PCME		2	200	S/S	FIREENABLE EVENT	
C H2088 X - ROLL/+Z SOLENOID DRIVER OUT	PCME		2	200	S/S	FIREENABLE EVENT	
C H2089 X + ROLL/-Z SOLENOID DRIVER OUT	PCME		2	200	S/S	FIREENABLE EVENT	
C H2090 X - ROLL/-Z SOLENOID DRIVER OUT	PCME		2	200	S/S	FIREENABLE EVENT	
C H2091 X + ROLL/+Y SOLENOID DRIVER OUT	PCME		2	200	S/S	FIREENABLE EVENT	
C H2092 X - ROLL/+Y SOLENOID DRIVER OUT	PCME		2	200	S/S	FIREENABLE EVENT	
C H2093 X + ROLL/-Y SOLENOID DRIVER OUT	PCME		2	200	S/S	FIREENABLE EVENT	
C H2094 X - ROLL/-Y SOLENOID DRIVER OUT	PCME		2	200	S/S	FIREENABLE EVENT	
C H2200 X,R RATE IN TRANSFER RELAY	A	3					EVENT
C H2201 X R G-N ATT IN RELAY	A	3					EVENT
C H2202 X R AG ATT IN RELAY	A	3					EVENT
C H2203 X R .05 G SWITCH RELAY	A	3					EVENT
C H2204 X R ENTRY GAIN RELAY	A	3					EVENT
C H2209 X G-N SYNC RELAY	A	3					EVENT
C H2217 X R AUTO INTERRUPT RELAY	AP	3	1	S/S INIRPI			EVENT
C H2218 X R PSEUDO RATE CUTOUT RELAY	A	3					EVENT
C H2240 V ECA R VOLTAGE LEVEL +30 VDC	A	3					0 +30.1 VDC



APJ110C A P C L L C C M / S M B L O C K I M E A S U R E M E N T L I S T VL=01

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MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			DISP	GSE	SYRO	LOW	HIGH UNITS
C	H2241	V ECA R VOLTAGE LEVEL +15 VDC	A	3		0 +15.8	VDC
C	H2242	V ECA R VOLTAGE LEVEL -15 VDC	A	3		-15.8	+0 VDC
C	H2243	V ECA R VOLTAGE LEVEL 20V SQW 1	A	3		0 +21.6	VDC
C	H2244	V ECA R VOLTAGE LEVEL 20V SQW 2	A	3		0 +21.6	VDC
C	H2246	V ECA R VOLTAGE LEVEL -10 VDC	A	3		-10.5	+0 VDC
C	H2247	V R SIG COND POWER SUPPLY RETURN	A	3		GND	
C	H2400	V ROLL SIGNAL GROUND	A	3		GND	
C	H2401	V AGAP-RGP SIGNAL GROUND	A	3		GND	
C	H2660	V ROLL TOTAL ERROR AMP NULL	AP	3	1	S/S	-2.5 +2.5 VDC
C	H3005	V ECA D VOLTAGE LEVEL +20 VDC 1	A	3		0 +21	VDC
C	H3006	V ECA D VOLTAGE LEVEL -20 VDC 1	A	3		-21	+0 VDC
C	H3007	V ECA D VOLTAGE LEVEL +20 VDC 2	A	3		0 +21	VDC
C	H3008	V ECA D VOLTAGE LEVEL -20 VDC 2	A	3		-21	+0 VDC
C	H3012	V 26V 400 CPS PHASE A AG MTR POWER	A	3		0 +26.8	VRMS
C	H3013	V 26V 400 CPS PHASE C AG MTR POWER	A	3		0 +26.8	VRMS
C	H3014	V AC POWER GROUND (MOTOR PHASE B)	A	3		GND	
C	H3019	V DC POWER GROUND GYRO	A	3		GND	



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MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
C	H3040	X ROLL WARM UP OUT	A	3	EVENT	
C	H3041	X PITCH WARM UP OUT	A	3	EVENT	
C	H3042	X YAW WARM UP OUT	A	3	EVENT	
C	H3129	V PITCH ATT SERVO AMP OUT	X	A	1	0 +30 VRMS
C	H3130	V YAW ATT SERVO AMP OUT	X	A	1	0 +30 VRMS
C	H3131	V ROLL ATT SERVO AMP OUT	X	A	1	0 +30 VRMS
C	H3135	V PITCH GPI AMP DEMOD OUT	X	A	1	-2.4 +2.4 VDC
C	H3136	V YAW GPI AMP DEMOD OUT	X	A	1	-2.7 +2.7 VDC
C	H3150	H PITCH ATT GYRO OUT	A	3	-20 +20 DEG	
C	H3151	H YAW ATT GYRO OUT	A	3	-20 +20 DEG	
C	H3152	H ROLL ATT GYRO OUT	A	3	-20 +20 DEG	
C	H3160	V PITCH AG TORQUE AMP OUT	A	3	-10 +10 VDC	
C	H3161	V YAW AG TORQUE AMP OUT	A	3	-10 +10 VDC	
C	H3162	V ROLL AG TORQUE AMP OUT	A	3	-10 +10 VDC	
C	H3165	A ACCELEROMETER OUT	A	3	-15.1 +0 VDC	GND
C	H3174	V 4KC CLOCK REF LO	A	3		
C	H3175	V PITCH ATT VEL GEN OUT	A	3	-1.0 +1.0 VRMS	



APJ110C A\_P\_C\_L\_L\_O\_C\_M / S\_M B\_L\_O\_C\_K\_I MEASUREMENT LIST VL-01

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MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	NCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
					TM/TR	DISP GSE SYRO	
C	H3176	V YAW ATT VEL GEN OUT	A	3	AP	3	-1.0 +1.0 VRMS
C	H3177	V ROLL ATT VEL GEN OUT	A	3	AP	3	-1.0 +1.0 VRMS
C	H3178	V 4KC CLOCK REF HI	AP	3	S/S	0	5 VP-P
C	H3179	A ACCEL TORQUE (ISOLATED RET)	AP	3	10	S/S	-711 +11 VDC
C	H3180	A ACCELEROMETER TORQUER	A	3	AP	3	-10 +10 VDC
C	H3185	X .05G MANUAL SWITCH	POME	2	10	S/S	0 +5 VDC
C	H3187	V AG SIG GEN PRIMARY 3.6 VAC PWR	A	3	AP	3	0 -3.7 VRMS
C	H3200	X ECA D PITCH BACK-UP RATE RELAY	A	3	AP	3	EVENT
C	H3201	X ECA D YAW BACK-UP RATE RELAY	A	3	AP	3	EVENT
C	H3202	X ECA D ROLL BACK-UP RATE RELAY	A	3	BU-RI	3	EVENT
C	H3203	X AGCU OUT TORQUE AMP IN RELAY	A	3	AGCU	3	EVENT
C	H3204	X AGAP SUM AMP OUT AGCU IN RELAY	A	3	AGCU	3	EVENT
C	H3205	X ECA D WARM UP RELAY	A	3	AGCU	3	EVENT
C	H3212	X ECA D AGCU TORQUE/MODE RELAY	A	3	AGCU	3	EVENT
C	H3217	X ECA D DV INTEGRATOR INHIBIT RELY	AP	3	S/S INHBI	1	EVENT
C	H3218	X ECA D THRUST ON RELAY	A	3	AP	3	EVENT
C	H3250	V PITCH VELOCITY AMP DEMOD OUT	X	A	1	1	-1.5 +1.5 VDC



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MEASUREMENT LIST

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MEAS. ID

MEASUREMENT DESCRIPTION

TM/TR

DISP

GSE

SYRO

MCPIF RESPONSE

DATA RANGE

LOW

HIGH

UNITS

LOCATION/REMARKS

MEAS.	ID	DESCRIPTION	ACCESSIBILITY	MCPIF RESPONSE	DATA RANGE	LOCATION/REMARKS
C	H3251	V YAW VELOCITY AND DEMOD OUT	X A 1		-1.5 +1.5 VDC	
C	H3252	V ROLL VELOCITY AMP DEMOD OUT	X A 1		-1.5 +1.5 VDC	
C	H3253	V FDIA PITCH RESOLVER OUT	A 3		-11.8 +11.8 VRMS	
C	H3254	V FDIA YAW RESOLVER OUT	A 3		-11.8 +11.8 VRMS	
C	H3255	V FDIA RCLL RESOLVER OUT	A 3		-11.8 +11.8 VRMS	
C	H3256	V PITCH ERROR AMP DEMOD OUT	X A 1		-1.5 +1.5 VDC	
C	H3257	V YAW ERROR AMP DEMOD OUT	X A 1		-1.5 +1.5 VDC	
C	H3258	V RCLL ERROR SERVO AMP OUT	X A 1		-1.5 +1.5 VDC	
C	H3271	H PITCH GIMBAL POS IN	AP 3	S/S	+7.0 -7.0 DEG	
C	H3272	H YAW GIMBAL FOS IN	AP 3	S/S	+12.0 -4.0 DEG	
C	H3304	V G-N 800 CPS REF HIGH	A 3		0 28 VRMS	
C	H3312	V G-N 800 CPS REF LOW	A 3		GND	
C	H3319	V DC POWER GROUND DISP	A 3		GND	
C	H3321	V DV SIG GROUND DISP	A 3		GND	
C	H3325	V ECA D VOLTAGE LEVEL +40 VDC	A 3		+0 +41 VDC	
C	H3326	V ECA D VOLTAGE LEVEL -40 VDC	A 3		-41 +0 VDC	
C	H3327	V ECA D VOLTAGE LEVEL +20 VDC	A 3		0 +21 VDC	



## APOLLO COMMAND BLOCK I MEASUREMENT LIST M-01

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MEAS. ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
	TM/TR DISP GSE SYRO	LOW	HIGH	UNITS	

C H3328 V ECA D VOLTAGE LEVEL +28 VDC	A 3		0 +33.2 VDC	
C H3329 V ECA D VOLTAGE LEVEL +12 VDC PS 1	A 3		0 +13.2 VDC	
C H3330 V ECA D VOLTAGE LEVEL -12 VDC PS 1	A 3		-13.2 0 VDC	
C H3332 V ECA D VOLTAGE LEVEL -12 VDC PS 2	A 3		-12.6 0 VDC	
C H3401 V ECA D AGAP-RGP SIGNAL GROUND	A 3		GND	
C H4001 V 26 V 400 CPS LAG PH A 23.7 DEG	A 3		0 27.3 VRMS	
C H4002 V 115V 400 CPS PHASE A	A 3		0 121 VRMS	
C H4003 V 115V 400 CPS PHASE B	A 3		0 121 VRMS	
C H4004 V 115V 400 CPS PHASE C	A 3		0 121 VRMS	
C H4005 V ECA X VOLTAGE LEVEL +40 VDC	A 3		0 +44 VDC	
C H4006 V ECA X VOLTAGE LEVEL -40 VDC	A 3		-44 0 VDC	
C H4007 V ECA X VOLTAGE LEVEL +20 VDC	A 3		+0 +23 VDC	
C H4008 V ECA X VOLTAGE LEVEL -20 VDC	A 3		-23 +0 VDC	
C H4009 V 28 VDC SCS INPUT POWER ECA X	A 3		0 +30 VDC	
C H4012 V 20V 400 CPS PH B ECA X	A 3		0 22 VRMS	
C H4013 V +31.1 VDC	A 3		0 +34.1 VDC	
C H4014 V AC POWER GROUND ECA X	A 3		GND	





APJLOC	A P U L L _ 0	C M / S M _ B L O C K _ I	M E A S U R E M E N T _ L I S T	VL-01	
SUBSYSTEM	SPACECRAFT	17			
MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
	C H4322 X G-N THRUST ON/OFF PULSE TRAIN IN	X A 1	DISP GSE SYRO	LOW 0	HIGH +13 VP-P
	C H4323 X DV THRUST OFF MAN CONT	AP 3	S/S TH-OFF	0	EVENT
	C H4324 X DV THRUST INITIATE MAN CCNT	A 3			IN-ON EVENT
	C H4330 V PITCH AG ERROR OUTPUT	A 3		-25	+25 VRMS
	C H4331 V YAW AG WIND AXIS ERROR OUT	A 3		-25	+25 VRMS
	C H4332 V_RQL AG WIND AXIS ERROR OUT	A 3		-25	+25 VRMS
	C H4340 X AUTO DV ON/OFF COMD	AP 3	S/S	0	DY-COMD EVENT
	C H4350 V PITCH EULER ANGLE ERROR	A 3		-22	+22 VRMS
	C H4351 V_AGCCU PITCH GATE OUT	A 3		0	+8.1 VDC
	C H4352 V YAW EULER ANGLE ERROR	A 3		-22	+22 VRMS
	C H4353 V AGCU YAW GATE OUT	A 3		0	+8.1 VDC
	C H4354 V_AGCCU ROLL GATE OUT	A 3		-22	+22 VRMS
	C H4356 V ORBITAL RATE IN	A 3		0	+0.12 VDC
	C H4357 V LOGIC ENABLE	A 3		0	+20 VDC
	C H4359 V_YAW_RSVR_1A_OUT_TORQUE_AMP_IN	A 3		-8.1	+8.1 VDC
	C H4360 V_YAW_RSVR_1B_OUT	A 3		-8.1	+8.1 VDC
	C H4361 V_YAW_RSVR_3_OUT_BUFFER_AMP_IN	A 3		-8.6	+8.6 VRMS

APJ110C A P O L L O C M / S M B L O C K I M E A S U R E M E N T L I S T V-01

## SUBSYSTEM STABILIZATION AND CONTROL

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MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPIF RESPONSE	DATA RANGE		LOCATION/REMARKS
					LOW	HIGH	
C	H4362	V AGCU PITCH TORQUE COMD	A	3	-12.1	+12.1	VDC
C	H4363	V AGCU ROLL/YAW TORQUE COMD	A	3	-12.1	+12.1	VDC
C	H4364	V AGCU SQ.HAVE GEN PHASE A	A	3	0	2.5	VPP
C	H4365	V AGCU SQ WAVE GEN PHASE A-180 DEG	A	3	0	2.5	VPP
C	H4366	V ECA VOLTAGE LEVEL -4 VDC	A	3	-4.6	0	VDC
C	H4400	X AGCU PITCH MOTOR COIL DRIVER 1	A	3	EVENT		
C	H4401	X AGCU PITCH MOTOR COIL DRIVER 2	A	3	EVENT		
C	H4402	X AGCU PITCH MOTOR COIL DRIVER 3	A	3	EVENT		
C	H4403	X AGCU PITCH MOTOR COIL DRIVER 4	A	3	EVENT		
C	H4404	X AGCU YAW MOTOR COIL DRIVER 1	A	3	EVENT		
C	H4405	X AGCU YAW MOTOR COIL DRIVER 2	A	3	EVENT		
C	H4406	X AGCU YAW MOTOR COIL DRIVER 3	A	3	EVENT		
C	H4407	X AGCU YAW MOTOR COIL DRIVER 4	A	3	EVENT		
C	H4408	X AGCU ROLL MOTOR COIL DRIVER 1	A	3	EVENT		
C	H4409	X AGCU ROLL MOTOR COIL DRIVER 2	A	3	EVENT		
C	H4410	X AGCU ROLL MOTOR COIL DRIVER 3	A	3	EVENT		
C	H4411	X AGCU ROLL MOTOR COIL DRIVER 4	A	3	EVENT		





APJLOC		A P O L L O C M / S M B L O C K I		M E A S U R E M E N T L I S T		VL-01
SUBSYSTEM		SPACECRAFT				SEPT 19, 1966 VEH
STABILIZATION AND CONTROL		17				PAGE NO. 73
MEAS.	10	MEASUREMENT DESCRIPTION	TMAIR	ACCESSIBILITY MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			DISP GSE SYRO	LOW	HIGH	UNITS
C	H4435	X YAW FORWARD RESET OUT	A	3		EVENT
C	H4436	X YAW REVERSE SET OUT	A	3		EVENT
C	H4437	X YAW REVERSE RESET OUT	A	3		EVENT
C	H4438	X RCLL FORWARD SET OUT	A	3		EVENT
C	H4439	X ROLL FORWARD RESET OUT	A	3		EVENT
C	H4440	X RCLL REVERSE SET OUT	A	3		EVENT
C	H4441	X ROLL REVERSE RESET OUT	A	3		EVENT
C	H4602	X PHASE ROTATION 115V 400 CPS	AP	3	1	S/S ABC ACB PHASE
C	H4700	B AGCU PITCH ERROR PHASE	A	3		
C	H4701	B AGCU YAW ERROR PHASE	A	3		
C	H4702	B AGCU RCLL ERROR PHASE	"	A	2	



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APJ10C APOLLO COMMAND BLOCK I MEASUREMENT LIST

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SPACECRAFT

FLIGHT TECHNOLOGY

SUBSYSTEM 10 MEASUREMENT DESCRIPTION ACCESSIBILITY MCPF RESPONSE DATA RANGE LOCATION/REMARKS

MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			TM/TR DLSP	GSE SYRO	LOW HIGH	UNITS
C	K1051	K RADIATION DOSIMETER 1	PCM	2	10	S/S +0 +100 RAD/H
C	K1052	K RADIATION DOSIMETER 2	PCM	2	10	S/S +0 +100 RAD/H
C	K1053	I TEMPERATURE DOSIMETER	PCM	2	1	S/S +0 +140 DEG F



## APJ110C A P O L L O C C M / S M B L O C K 1 M E A S U R E M E N T L I S T

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MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						LOW	HIGH	
S P0001 P	HE PRESS TANK	PCM+		2 X 10	\$/\$	+0	+5K PSIA	
S P0002 T	HE TEMP TANK	PCM		2 1	\$/\$	-100	+200 DEG F	
S P0003 P	PRESS OXIDIZER TANKS	PCM+	M	1 10	\$/\$	+0	+300 PSIA	
S P0006 P	PRESS FUEL TANKS	PCM+	M	1 10	\$/\$	+0	+300 PSIA	
S P0009 P	PRESS MAIN VLV ENG OXIDIZER IN	PCM		2 X 10	\$/\$	+0	+300 PSIA	
S P0010 P	PRESS MAIN VLV ENG FUEL IN	PCM		2 X 10	\$/\$	+0	+300 PSIA	
S P0020 T	TEMP CHAMBER OUTER SKIN 1	PCM		2 X 1	\$/\$	+0	+500 DEG F	
S P0022 H	POSITION FUEL/OXIDIZER VLV 1	PCM		2 X 10	\$/\$	+0	+90 DEG	
S P0023 H	POSITION FUEL/OXIDIZER VLV 2	PCM		2 X 10	\$/\$	+0	+90 DEG	
S P0024 H	POSITION FUEL/OXIDIZER VLV 3	PCM		2 X 10	\$/\$	+0	+90 DEG	
S P0025 H	POSITION FUEL/OXIDIZER VLV 4	PCM		2 X 10	\$/\$	+0	+90 DEG	
S P0030 X	HE ISOLATION VLV 1	IB IP	I	1 10	\$/\$	OPEN CLOSE EVENT		
S P0031 X	HE ISOLATION VLV 2	TB TP	I	1 10	\$/\$	OPEN CLOSE EVENT		
S P0050 T	TEMP NOZZLE OUTER SKIN 1	PCM		2 1	\$/\$	-250	+2500 DEG F	
S P0C99 P	PRESS TEST POINT 1		I	3		+0	+5K PSIG	
S P0100 P	PRESS TEST POINT 2		T	3		+0	+5K PSIG	
S P0101 P	PRESS TEST POINT 3		T	3		+0	+5K PSIG	



APJ110C APOLLO CM / SM BLOCK I MEASUREMENT LIST VL-01						
SUBSYSTEM SERVICE PROPULSION		SPACECRAFT	17	SEPT 19, 1966 VEH PAGE NO. 75		
MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY IM/TR	MCPF RESPONSE DISP GSE SYRO	DATA RANGE LOW HIGH	LOCATION/REMARKS UNITS
S	P0102 P PRESS TEST POINT 4		I 3		+0 +300 PSIG	
S	P0103 P PRESS TEST POINT 5		I 3		+0 +300 PSIG	
S	P0104 P PRESS TEST POINT 6		I 3		+0 +300 PSIG	
S	P0105 P PRESS TEST POINT 7		I 3		+0 +300 PSIG	
S	P0106 P PRESS TEST POINT 8		I 3		+0 +300 PSIG	
S	P0107 P PRESS TEST POINT 9		I 3		+0 +300 PSIG	
S	P0108 P PRESS TEST POINT 10		I 3		+0 +300 PSIG	
S	P0109 P PRESS TEST POINT 11		I 3		+0 +250 PSIG	
S	P0110 P PRESS TEST POINT 12		I 3		+0 +250 PSIG	
S	P0111 P PRESS TEST POINT 13		I 3		+0 +300 PSIG	
S	P0112 P PRESS TEST POINT 14		I 3		+0 +300 PSIG	
S	P0113 P PRESS TEST POINT 15		I 3		+0 +300 PSIG	
S	P0114 P PRESS TEST POINT 16		I 3		+0 +300 PSIG	
S	P0115 P PRESS TEST POINT 17		I 3		+0 +300 PSIG	
S	P0116 P PRESS TEST POINT 18		I 3		+0 +300 PSIG	
S	P0118 P PRESS TEST POINT 20		I 3		+0 +50 PSIA	
S	P0119 P PRESS TEST POINT 21		I 3		+0 +50 PSIA	





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## A P O L L O C M / S M B L O C K I M E A S U R E M E N T L I S T

SUBSYSTEM ID MEASUREMENT DESCRIPTION SPACECRAFT 17

MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	DISP	MCPI RESPONSE	DATA RANGE		LOCATION/REMARKS
						LOW	HIGH	
S	P2055	T TEMP GIMBAL ACTR CASE (PITCH)	FQ		4	1	S/S	+0 +200 DEG F
S	P2071	T TEMP CHAMBER/NOZZLE FLANGE	FQ		4	1	S/S	-100 +600 DEG F
S	P2075	T TEMP OX HT EXCHANGER HELIUM IN	FQ		4	1	S/S	-100 +200 DEG F
S	P2076	T TEMP OX HT EXCHANGER HELIUM CUT	FQ		4	1	S/S	-100 +200 DEG F
S	P2077	T TEMP FUEL HT EXCHANGER HELIUM IN	FQ		4	1	S/S	-100 +200 DEG F
S	P2078	T TEMP FUEL HT EXCHANGER HELIUM OUT	FQ		4	1	S/S	-100 +200 DEG F
S	P3100	X FUEL TANK 1 PT SENSOR 1 TOP	TP	3	1	S/S	WET	DRY EVENT
S	P3101	X FUEL TANK 1 PT SENSOR 2	TP	3	1	S/S	WET	DRY EVENT
S	P3102	X FUEL TANK 1 PT SENSOR 3	TP	3	1	S/S	WET	DRY EVENT
S	P3103	X FUEL TANK 1 PT SENSOR 4	TP	3	1	S/S	WET	DRY EVENT
S	P3104	X FUEL TANK 1 PT SENSOR 5	TP	3	1	S/S	WET	DRY EVENT
S	P3105	X FUEL TANK 1 PT SENSOR 6	TP	3	1	S/S	WET	DRY EVENT
S	P3106	X FUEL TANK 1 PT SENSOR 7 BOTTOM	TP	3	1	S/S	WET	DRY EVENT
S	P3107	X FUEL TANK 2 PT SENSOR 1 TOP	TP	3	1	S/S	WET	DRY EVENT
S	P3108	X FUEL TANK 2 PT SENSOR 2	TP	3	1	S/S	WET	DRY EVENT
S	P3109	X FUEL TANK 2 PT SENSOR 3	TP	3	1	S/S	WET	DRY EVENT
S	P3110	X FUEL TANK 2 PT SENSOR 4	TP	3	1	S/S	WET	DRY EVENT



APJ110C A P C L L 0 C M / S M B L O C K J M E A S U R E M E N T L I S T

SUBSYSTEM<sup>M</sup> SPACECRAFT 17 VEH

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MEAS. ID MEASUREMENT DESCRIPTION IM/LR ACCESSIBILITY MCPF RESPONSE DATA RANGE LOCATION/REMARKS

SUBSYSTEM <sup>M</sup>	MEAS. ID	MEASUREMENT DESCRIPTION	IM/LR	DISP GSE SYKO	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
SPACECRAFT	17				TP	3	1	LON HIGH UNITS
S P3111 X FUEL TANK 2 PT SENSOR 5					TP	3	1	S/S WET DRY EVENT
S P3112 X FUEL TANK 2 PT SENSOR 6					TP	3	1	S/S WET DRY EVENT
S P3113 X FUEL TANK 2 PT SENSOR 7					TP	3	1	S/S WET DRY EVENT
S P3114 X FUEL TANK 2 PT SENSOR 8 BOTTOM					TP	3	1	S/S WET DRY EVENT
S P3115 X CX TANK 1 PT SENSOR 1 TOP					TP	3	1	S/S WET DRY EVENT
S P3116 X OX TANK 1 PT SENSOR 2					TP	3	1	S/S WET DRY EVENT
S P3117 X OX TANK 1 PT SENSOR 3					TP	3	1	S/S WET DRY EVENT
S P3118 X OX TANK 1 PT SENSOR 4					TP	3	1	S/S WET DRY EVENT
S P3119 X OX TANK 1 PT SENSOR 5					TP	3	1	S/S WET DRY EVENT
S P3120 X OX TANK 1 PT SENSOR 6					TP	3	1	S/S WET DRY EVENT
S P3121 X OX TANK 1 PT SENSOR 7 BOTTOM					TP	3	1	S/S WET DRY EVENT
S P3122 X OX TANK 2 PT SENSOR 1 TOP					TP	3	1	S/S WET DRY EVENT
S P3123 X OX TANK 2 PT SENSOR 2					TP	3	1	S/S WET DRY EVENT
S P3124 X OX TANK 2 PT SENSOR 3					TP	3	1	S/S WET DRY EVENT
S P3125 X OX TANK 2 PT SENSOR 4					TP	3	1	S/S WET DRY EVENT
S P3126 X OX TANK 2 PT SENSOR 5					TP	3	1	S/S WET DRY EVENT
S P3127 X OX TANK 2 PT SENSOR 6					TP	3	1	S/S WET DRY EVENT



APJ110C APOLLO C.M./SM BLOCK I MEASUREMENT LIST VL-01

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MEASUREMENT LIST

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MEAS.	MEASUREMENT DESCRIPTION	IM/IR DISP GSE SYRO	ACCESIBILITY MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
				LOW	HIGH	
S P3128 X OX TANK 2 PT SENSOR	7	IP	3	1	S/S	WEI DRY EVENT
S P3129 X OX TANK 2 PT SENSOR	8 BOTTCM	IP	3	1	S/S	WEI DRY EVENT
S P3152 H PRI VALVE SERVO OUTPUT		IP	3	1	S/S	0 100 PCI
S P3153 H SEC VALVE SERVO OUTPUT		JP	3	1	S/S	0 100 PCI
S P3158 Q AUX OX SERVO TLM OUTPUT		IP	3	1	S/S	0 32K LB
S P3159 Q AUX FUEL SERVO TLM OUTPUT		IP	3	1	S/S	0 16K LB
S P3161 Q PRI OX TANK 1 SERVO TLM OUTPUT		IP	3	1	S/S	0 16K LB
S P3163 Q PRI FUEL TANK 1 SERVO TLM OUTPUT		IP	3	1	S/S	0 8K LB



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## APOLLO COMM / S.M. BLOCK I MEASUREMENT LIST

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SUBSYSTEM  
REACTION CONTROL

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MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						LOW	HIGH	
C R0001	P HE PRESS TANK A	PCM+	SM	1 X 1	S/S	+0	+5K PSIA	
C R0002	P HE PRESS TANK B	PCM+	SM	1 X 1	S/S	+0	+5K PSIA	
C R0003	T HE TEMP TANK A	PCM	SM	1	S/S	+0	+300 DEG F	
C R0004	T HE TEMP TANK B	PCM	SM	1	S/S	+0	+300 DEG F	
C R0005	P PRESS FUEL TANK A	PCM+	SM	1 X 10	S/S	+0	+400 PSIA	
C R0006	P PRESS FUEL TANK B	PCM+	SM	1 X 10	S/S	+0	+400 PSIA	
C R0011	P PRESS OXIDIZER TANK A	PCM+	SM	1 X 10	S/S	+0	+400 PSIA	
C R0012	P PRESS OXIDIZER TANK B	PCM+	SM	1 X 10	S/S	+0	+400 PSIA	
C R0248	X RCS TRANSFER SW A (S/M)		IP	3	1	S/S	+0	TRANS EVENT
C R0249	X RCS TRANSFER SW B (S/M)		TP	3	1	S/S	-	TRANS EVENT
C R0250	X 42 SEC TD RELAY C19A1K1 SYS A		TP	3	1	S/S	-	END EVENT
C R0251	X 42 SEC TD RELAY C19A2K1 SYS B		TP	3	1	S/S	-	END EVENT
C R0266	X 18 SEC TD RELAY C19A1K12 SYS A		TP	3	10	S/S	-	END EVENT
C R0267	X 18 SEC TD RELAY C19A2K12 SYS B		TP	3	10	S/S	-	END EVENT
C R0268	X 18 SEC TD RELAY C19A1K13 SYS A		TP	3	10	S/S	-	END EVENT
C R0269	X 18 SEC TD RELAY C19A2K13 SYS B		TP	3	10	S/S	-	END EVENT
C R0514	P CCW ROLL ENG PRESS SYSS A	FQ		4	100	CPS	+0	+250 PSIA



APJ110C APOLLO CM / SM BLOCK I MEASUREMENT LIST VL-01

SUBSYSTEM REACTION CONTROL

MEAS. ID MEASUREMENT DESCRIPTION

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DATA RANGE

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LOCATION/REMARKS

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SUBSYSTEM	DESCRIPTION	IM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			DISP	GSE SYRD	LOW	HIGH UNITS
C R0518 P -YAW ENG PRESS SYS A	FQ			4	100 CPS	+0 +250 PSIA
C R0520 P CCM ROLL ENG PRESS SYS B	FQ			4	100 CPS	+0 +250 PSIA
C R0525 P +YAW ENG PRESS SYS B	FQ			4	100 CPS	+0 +250 PSIA
C R0570 T TEMP SEAL + PITCH ENG SYS A	FQ			4	S/S	+0 +1000 DEG F
C R0571 T TEMP SEAL + PITCH ENG SYS B	FQ			4	S/S	+0 +1000 DEG F
C R1001 P TP 65 HE VENT FUEL SIDE SYS A				1	3	
C R1002 P TP 64 HE VENT OX SIDE SYS A				1	3	
C R1003 P TP 15 HE VENT FUEL SIDE SYS B				1	3	
C R1004 P TP 14 HE VENT OX SIDE SYS B				1	3	
C R1005 P PRESS TEST POINT 54				1	3	
C R1006 P PRESS TEST POINT 53				1	3	
C R1007 P PRESS TEST POINT 4				1	3	
C R1008 P PRESS TEST POINT 3				1	3	
C R1020 X COMBINED PROP ISO VLV MCN SYS A		TB	IP	1	1	S/S OPEN CLOSE EVENT
C R1021 X COMBINED PROP ISO VLV MCN SYS B		TB	IP	1	1	S/S OPEN CLOSE EVENT
C R1022 X HE PRESS SQUIB VLV C19SQ14 A				1	3	
C R1023 X HE PRESS SQUIB VLV C19SQ2 B				1	3	



SUBSYSTEM REACTION CONTROL	APULLO C.M./SM BLOCK I MEASUREMENT LIST	MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOW	HIGH	UNITS	LOCATION/REMARKS	VL-01
												SPACECRAFT
C R1024	X HE PRESS SQUIB VLV C19S015 A				T							SEPT 19, 1966
C R1025	X HE PRESS SQUIB VLV C19S08 B				T							PAGE NO. 82
C R1026	X HE DUMP SQUIB VLV CONTINUITY				T							
C R1044	P PRESS TEST POINT 6				T							
C R1045	P PRESS TEST POINT 7				T							
C R1046	P PRESS TEST POINT 58				T							
C R1047	P PRESS TEST POINT 59				T							
C R1048	P PRESS TEST POINT 8				T							
C R1049	P PRESS TEST POINT 9				T							
C R1050	P PRESS TEST POINT 60				T							
C R1051	P PRESS TEST POINT 10				T							
C R1052	P PRESS TEST POINT 61				T							
C R1053	P PRESS TEST POINT 11				T							
C R1054	P PRESS TEST POINT 62				T							
C R1055	P PRESS TEST POINT 12				T							
C R1056	P PRESS TEST POINT 63				T							
C R1057	P PRESS TEST POINT 13				T							



APJ11OC A P C L L U C M / S M B L O C K I M E A S U R E M E N T L I S T VL-01

SUBSYSTEM  
REACTION CONTROL

SPACECRAFT 17

VEH  
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PAGE NO. 83MEAS. ID MEASUREMENT DESCRIPTION DATA RANGE LOCATION/REMARKS  
ACCESSIBILITY MCPF RESPONSE  
TM/TR DISP GSE SYRO LOW HIGH UNITS

MEAS.	ID	DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			TM/TR	DISP GSE	SYRO	LOW HIGH UNITS
C R1058	P TP 66	OXIDIZER FILL SYS A	T	T	3	
C R1059	P TP 16	OXIDIZER FILL SYS B	T	T	3	
C R1060	P TP 67	FUEL FILL SYS A	T	T	3	
C R1061	P TP 17	FUEL FILL SYS B	T	T	3	
C R1070	P PRESS	TEST POINT 51	T	T	3	
C R1071	P PRESS	TEST POINT 1	T	T	3	
C R1072	P PRESS	TEST POINT 68	T	T	3	
C R1073	P PRESS	TEST POINT 18	T	T	3	
C R1074	P PRESS	TEST POINT 69	T	T	3	
C R1075	P PRESS	TEST POINT 19	T	T	3	
C R1076	P PRESS	TEST POINT 70	T	T	3	
C R1077	P PRESS	TEST POINT 20	T	T	3	
C R1078	P PRESS	TEST POINT 71	T	T	3	
C R1079	P PRESS	TEST POINT 21	T	T	3	
C R1084	P TP 72	OXIDIZER LIQUID VENT SYS A	T	T	3	
C R1085	P TP 22	OXIDIZER LIQUID VENT SYS B	T	T	3	
C R1086	P TP 73	FUEL LIQUID VENT SYS A	T	T	3	



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SUBSYSTEM

MEASUREMENT LIST

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ACCESIBILITY

MCPLF RESPONSE

DATA RANGE

LOCATION/REMARKS

IM/IR

DISP

GSE

SYRO

LOW

HIGH

UNITS

MEAS. ID

MEASUREMENT DESCRIPTION

C R1087 P TP 23 FUEL LIQUID VENT SYS B

C R1120 X LX DUMP SQUIB VLV CONT SYS A

C R1121 X OX DUMP SQUIB VLV CONT SYS B

C R1122 X OX-HE BYPASS SQUIB VLV CCNT SYS A

C R1123 X OX-HE BYPASS SQUIB VLV CCNT SYS B

C R1124 X FUEL-HE BYPASS SQUIB VLV CCNT A

C R1125 X FUEL-HE BYPASS SQUIB VLV CCNT B

C R1126 X HE INTERCON SQUIB VLV CONT-FUEL

C R1127 X HE INTERCON SQUIB VLV CCNT-UX

C R1128 X OX SYS INTERCON SQUIB VLV CCNT

C R1129 X FUEL SYS INTERCON SQUIB VLV CCNT

C R1401 V CM RJ DIR COIL MCN SYS A +P

C R1402 V CM RJ DIR COIL MCN SYS A -P

C R1403 V CM RJ DIR COIL MCN SYS B +P

C R1404 V CM RJ DIR COIL MCN SYS B -P

C R1405 V CM RJ DIR COIL MUN SYS B +Y

C R1406 V CM RJ DIR COIL MCN SYS B -Y



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APOLLO-CM/BLOCK I MEASUREMENT LIST		SPACECRAFT	17	SEPT 19, 1966	VEH		
SUBSYSTEM	REACTION CONTROL	ID	MEASUREMENT DESCRIPTION	IM/TR DISP	MCPF RESPONSE GSE SYRO	DATA RANGE LOW HIGH	LOCATION/REMARKS UNITS
C R1407 V CM RJ DIR COIL MON SYS A +Y						T 3	
C R1408 V CM RJ DIR COIL MON SYS A -Y						T 3	
C R1409 V CM RJ DIR COIL MON SYS A +R						I 3	
C R1410 V CM RJ DIR COIL MON SYS B -R						I 3	
C R1411 V CM RJ DIR COIL MON SYS B +R						I 3	
C R1412 V CM RJ DIR COIL MON SYS A -R						I 3	
C R1481 V CM RJ AUTO COIL MON SYS A +P						I 3	
C R1482 V CM RJ AUTO COIL MON SYS A -P						I 3	
C R1483 V CM RJ AUTO COIL MON SYS B +P						I 3	
C R1484 V CM RJ AUTO COIL MON SYS B -P						I 3	
C R1485 V CM RJ AUTO COIL MON SYS B +Y						I 3	
C R1486 V CM RJ AUTO COIL MON SYS B -Y						I 3	
C R1487 V CM RJ AUTO COIL MON SYS A +Y						I 3	
C R1488 V CM RJ AUTO COIL MON SYS A -Y						I 3	
C R1489 V CM RJ AUTO COIL MON SYS A +R						I 3	
C R1490 V CM RJ AUTO COIL MON SYS B -R						I 3	
C R1491 V CM RJ AUTO COIL MON SYS B +R						I 3	

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A P J L L 0 C M / S M B L O C K I M E A S U R E M E N T L I S T

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SUBSYSTEM REACTION CONTROL

MEAS. ID MEASUREMENT DESCRIPTION  
TM/TR DISP GSE SYROACCESSIBILITY MCPIF RESPONSE  
ROLL HIGH UNITSDATA RANGE  
LOW HIGH UNITS

C R1492 V CM RJ AUTO COIL MON SYS A -R	FQ	4 1	S/S +0 +600 DEG F
C R2103 T TEMP -Y ENG INJECTOR SYS A	FQ	4 1	S/S +0 +600 DEG F
C R2114 T TEMP CCW ROLL INJECTOR SYS A	FQ	4 1	S/S +0 +600 DEG F
C R2115 T TEMP CCW ROLL INJECTOR SYS B	FQ	4 1	S/S +0 +600 DEG F
C R2116 T TEMP +Y ENG INJECTOR SYS B	FQ	4 1	S/S +0 +600 DEG F
C R2201 T TEMP OX VALVE CCW ENG SYS A	PCM	2 1	S/S -50 +250 DEG F
C R2202 T TEMP OX VALVE -Y ENG SYS A	PCM	2 1	S/S -50 +250 DEG F
C R2203 T TEMP OX VALVE +Y ENG SYS B	PCM	2 1	S/S -50 +250 DEG F
C R2204 T TEMP OX VALVE -P ENG SYS B	PCM	2 1	S/S -50 +250 DEG F
C R2205 T TEMP OX VALVE -P ENG SYS A	PCM	2 1	S/S -50 +250 DEG F
C R2206 T TEMP OX VALVE CW ENG SYS B	PCM	2 1	S/S -50 +250 DEG F
C R4553 T -YAW ENG OUT WALL TEMP 1 SYS A	FQ	4 1	S/S +0 +1000 DEG F
C R4554 T -YAW ENG OUT WALL TEMP 2 SYS A	FQ	4 1	S/S +0 +1000 DEG F
C R4556 T +YAW ENG CUT WALL TEMP 1 SYS B	FQ	4 1	S/S +0 +1000 DEG F
C R4557 T +YAW ENG CUT WALL TEMP 2 SYS B	FQ	4 1	S/S +0 +1000 DEG F
C R4559 T CCW ROLL ENG OUT WALL T 1 SYS A	FQ	4 1	S/S +0 +1000 DEG F
C R4560 T CCW ROLL ENG OUT WALL T 2 SYS A	FQ	4 1	S/S +0 +1000 DEG F



MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCFF RESPONSE	DATA RANGE		LOCATION/REMARKS
					LOW	HIGH	
C R4580	T CCW ROLL ENG OUT WALL T 1	SYS B	FQ	PCM+	4	1	S/S +0 +1000 DEG F
C R4581	T CCW ROLL ENG OUT WALL T 2	SYS B	FQ	PCM+	4	1	S/S +0 +1000 DEG F
S R5001	P HE PRESS TANK A		SM	SM	1 X 1	S/S	+0 +5K PSIA YA-11,ZA-81
S R5002	P HE PRESS TANK B		PCM+	SM	1 X 1	S/S	+0 +5K PSIA YA-81,ZA-11
S R5003	P HE PRESS TANK C		PCM+	SM	1 X 1	S/S	+0 +5K PSIA YA-11,ZA-81
S R5004	P HE PRESS TANK D		PCM+	SM	1 X 1	S/S	+0 +5K PSIA YA-963,YA-81,ZA11
S R5005	T HE TEMP TANK A		TP	3	1	S/S	-100 +200 DEG F YA-963,YA-11,ZA-81
S R5006	T HE TEMP TANK B		TP	3	1	S/S	-100 +200 DEG F YA-963,YA-81,ZA-11
S R5007	T HE TEMP TANK C		TP	3	1	S/S	-100 +200 DEG E YA-963,YA-11,ZA81
S R5008	T HE TEMP TANK D		TP	3	1	S/S	-100 +200 DEG F YA-963,YA-81,ZA11
S R5050	X COMBINED PROP ISO VLV MON SYS A		TB	TP	1	1	S/S OPEN CLOSE EVENT
S R5051	X COMBINED PROP ISO VLV MON SYS B		TB	TP	1	1	S/S OPEN CLOSE EVENT
S R5052	X COMBINED PROP ISO VLV MON SYS C		TB	TP	1	1	S/S OPEN CLOSE EVENT
S R5053	X COMBINED PROP ISO VLV MON SYS D		TB	TP	1	1	S/S OPEN CLOSE EVENT
S R5065	L TEMP ENGINE PACKAGE A1		PCM	SM	1 X 1	S/S	+0 +300 DEG F YA-963,YA-11,ZA-81
S R5066	T TEMP ENGINE PACKAGE B1		PCM	SM	1 X 1	S/S	+0 +300 DEG F YA-963,YA-81,ZA11
S R5067	T TEMP ENGINE PACKAGE C1		PCM	SM	1 X 1	S/S	+0 +300 DEG F YA-963,YA11,ZA81



MEASUREMENT LIST							VL-01
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MEAS.	ID	MEASUREMENT DESCRIPTION	SPACECRAFT	TM/TR	MCPF RESPONSE	DISP GSE SYRO	LOW HIGH UNITS
S R5068	T TEMP	ENGINE PACKAGE D1	PCM	SM	1 X 1	S/S	+0 +300 DEG F XA963, YA81, ZA-11.
S R5101	X HE	ISOLATION VLV A1 POSITION		TP	1 1	S/S	OPEN CLOSE EVENT
S R5102	X HE	ISOLATION VLV B1 POSITION		TP	1 1	S/S	OPEN CLOSE EVENT
S R5103	X HE	ISOLATION VLV C1 POSITION		TP	1 1	S/S	OPEN CLOSE EVENT
S R5104	X HE	ISOLATION VLV D1 POSITION		TP	1 1	S/S	OPEN CLOSE EVENT
S R5105	X HE	ISOLATION VLV A2 POSITION		TP	1 1	S/S	OPEN CLOSE EVENT
S R5106	X HE	ISOLATION VLV B2 POSITION		TP	1 1	S/S	OPEN CLOSE EVENT
S R5107	X HE	ISOLATION VLV C2 POSITION		TP	1 1	S/S	OPEN CLOSE EVENT
S R5108	X HE	ISOLATION VLV D2 POSITION		TP	1 1	S/S	OPEN CLOSE EVENT
S R5729	P A	HE MANIFOLD PRESS	PCM+	SM	1 X 10	S/S	+0 +400 PSIA XA963, YA-11, ZA-81
S R5776	P B	HE MANIFOLD PRESS	PCM+	" SM	1 X 10	S/S	+0 +400 PSIA XA963, YA81, ZA-11
S R5817	P C	HE MANIFOLD PRESS	PCM+	" SM	1 X 10	S/S	+0 +400 PSIA XA963, YA11, ZA81.
S R5830	P D	HE MANIFOLD PRESS	PCM+	SM	1 X 10	S/S	+0 +400 PSIA XA963, YA-81, ZA11
S R6010	P PRESS	SYS A TEST POINT 2		T	3		+0 +5K PSIG
S R6011	P PRESS	SYS A TEST POINT 3		T	3		+0 +5K PSIG
S R6012	P PRESS	SYS B TEST POINT 2		T	3		+0 +5K PSIG
S R6013	P PRESS	SYS B TEST POINT 3		T	3		+0 +5K PSIG



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MEAS. ID MEASUREMENT DESCRIPTION TM/TR ACCESSIBILITY MCPF RESPONSE DATA RANGE LOCATION/REMARKS

MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	DISP GSE SYS	LOW	HIGH	UNITS	LOCATION/REMARKS
S R6014 P PRESS SYS C TEST POINT 2			T	3	+0	+0	+5K PSIG	
S R6015 P PRESS SYS C TEST POINT 3			T	3	+0	+0	+5K PSIG	
S R6016 P PRESS SYS D TEST POINT 2			T	3	+0	+0	+5K PSIG	
S R6017 P PRESS SYS D TEST POINT 3			T	3	+0	+0	+5K PSIG	
S R6030 P PRESS SYS A TEST POINT 11			T	3	+0	+0	+300 PSIG	
S R6031 P PRESS SYS A TEST POINT 12			T	3	+0	+0	+300 PSIG	
S R6032 P PRESS SYS B TEST POINT 11			T	3	+0	+0	+300 PSIG	
S R6033 P PRESS SYS B TEST POINT 12			T	3	+0	+0	+300 PSIG	
S R6034 P PRESS SYS C TEST POINT 11			T	3	+0	+0	+300 PSIG	
S R6035 P PRESS SYS C TEST POINT 12			T	3	+0	+0	+300 PSIG	
S R6036 P PRESS SYS D TEST POINT 11			T	3	+0	+0	+300 PSIG	
S R6037 P PRESS SYS D TEST POINT 12			T	3	+0	+0	+300 PSIG	
S R6050 P PRESS SYS A TEST POINT 6			T	3	+0	+0	+300 PSIG	
S R6051 P PRESS SYS B TEST POINT 6			T	3	+0	+0	+300 PSIG	
S R6052 P PRESS SYS C TEST POINT 6			T	3	+0	+0	+300 PSIG	
S R6053 P PRESS SYS D TEST POINT 6			T	3	+0	+0	+300 PSIG	
S R6054 P PRESS SYS A TEST POINT 7			T	3	+0	+0	+300 PSIG	



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## REACTION CONTROL

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MEAS.	10	MEASUREMENT DESCRIPTION	IM/IR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						DLSR	GSE	
S	R6055	P PRESS SYS A TEST POINT	8	T	3	+0	+300 PSIG	
S	R6056	P PRESS SYS B TEST POINT	7	T	3	+0	+300 PSIG	
S	R6057	P PRESS SYS B TEST POINT	8	T	3	+0	+300 PSIG	
S	R6058	P PRESS SYS C TEST POINT	7	T	3	+0	+300 PSIG	
S	R6059	P PRESS SYS C TEST POINT	8	T	3	+0	+300 PSIG	
S	R6060	P PRESS SYS D TEST POINT	7	T	3	+0	+300 PSIG	
S	R6061	P PRESS SYS D TEST POINT	8	T	3	+0	+300 PSIG	
S	R6062	P PRESS SYS A TEST POINT	9	T	3	+0	+300 PSIG	
S	R6063	P PRESS SYS A TEST POINT	10	T	3	+0	+300 PSIG	
S	R6064	P PRESS SYS B TEST POINT	9	T	3	+0	+300 PSIG	
S	R6065	P PRESS SYS B TEST POINT	10	T	3	+0	+300 PSIG	
S	R6066	P PRESS SYS C TEST POINT	9	T	3	+0	+300 PSIG	
S	R6067	P PRESS SYS C TEST POINT	10	T	3	+0	+300 PSIG	
S	R6068	P PRESS SYS D TEST POINT	9	T	3	+0	+300 PSIG	
S	R6069	P PRESS SYS D TEST POINT	10	T	3	+0	+300 PSIG	
S	R6070	P PRESS SYS A TEST POINT	13	T	3	+0	+300 PSIG	
S	R6071	P PRESS SYS B TEST POINT	13	T	3	+0	+300 PSIG	



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APOLLO CSM BLOCK 1 MEASUREMENT LIST

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REACTION CONTROL

MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR	DISP GSE	DATA RANGE		LOCATION/REMARKS
				LOW	HIGH	
S R6072 P PRESS SYS C TEST POINT 13		T	3	+0	+300	PSIG
S R6073 P PRESS SYS D TEST POINT 13		T	3	+0	+300	PSIG
S R6074 P PRESS SYS A TEST POINT 14		I	3	+0	+300	PSIG
S R6075 P PRESS SYS B TEST POINT 14		T	3	+0	+300	PSIG
S R6076 P PRESS SYS C TEST POINT 14		T	3	+0	+300	PSIG
S R6077 P PRESS SYS D TEST POINT 14		T	3	+0	+300	PSIG
S R6080 P PRESS SYS A TEST POINT 1		T	3	+0	+5K	PSIG
S R6081 P PRESS SYS B TEST POINT 1		T	3	+0	+5K	PSIG
S R6082 P PRESS SYS C TEST POINT 1		I	3	+0	+5K	PSIG
S R6083 P PRESS SYS D TEST POINT 1		T	3	+0	+5K	PSIG
S R6084 P PRESS SYS A OXIDIZER FILL TP 15		T	3	+0	+300	PSIG
S R6085 P PRESS SYS B OXIDIZER FILL TP 15		I	3	+0	+300	PSIG
S R6086 P PRESS SYS C OXIDIZER FILL TP 15		T	3	+0	+300	PSIG
S R6087 P PRESS SYS D OXIDIZER FILL TP 15		T	3	+0	+300	PSIG
S R6088 P PRESS SYS A FUEL FILL TP 16		I	3	+0	+300	PSIG
S R6089 P PRESS SYS B FUEL FILL TP 16		T	3	+0	+300	PSIG
S R6090 P PRESS SYS C FUEL FILL TP 16		T	3	+0	+300	PSIG



## APJ110C APOUL COMM/BLOCK I MEASUREMENT LIST VL-01

SUBSYSTEM SPACECRAFT 17

REACTION CONTROL

MEAS. ID MEASUREMENT DESCRIPTION

ACCESSIBILITY MCPF RESPONSE DATA RANGE LOCATION/REMARKS

MEAS. ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
S R6C91 P PRESS SYS C FUEL FILL TP 16	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6092 P PRESS SYS A TEST POINT 17	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6093 P PRESS SYS B TEST POINT 17	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6C94 P PRESS SYS C TEST POINT 17	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6095 P PRESS SYS D TEST POINT 17	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6096 P PRESS SYS A TEST POINT 18	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6097 P PRESS SYS B TEST POINT 18	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6098 P PRESS SYS C TEST POINT 18	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6099 P PRESS SYS D TEST POINT 18	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6100 P PRESS SYS A OXIDIZER VENT TP 19	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6101 P PRESS SYS B OXIDIZER VENT TP 19	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6102 P PRESS SYS C OXIDIZER VENT TP 19	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6103 P PRESS SYS D OXIDIZER VENT TP 19	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6104 P PRESS SYS A FUEL VENT TP 20	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6105 P PRESS SYS B FUEL VENT TP 20	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6106 P PRESS SYS C FUEL VENT TP 20	IM/IR GSE SYRO	T	3	+0 +300 PSIG	
S R6107 P PRESS SYS J FUEL VENT TP 20	IM/IR GSE SYRO	T	3	+0 +300 PSIG	



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APOLLO CSM BLOCK I MEASUREMENT LIST

SUBSYSTEM

REACTION C.C. TRNL

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MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			DSP GSE SYRO		LOW	HIGH	UNITS

S R6401	V SM RJ	DIR COIL MON QUAD C +P	T	3			
S R6402	V SM RJ	DIR COIL MCN QUAD A -P	T	3			
S R6403	V SM RJ	DIR COIL MON QUAD A +P	T	3			
S R6404	V SM RJ	DIR COIL MCN QUAD C -P	T	3			
S R6405	V SM RJ	DIR COIL MON QUAD C +Y	T	3			
S R6406	V SM RJ	DIR COIL MCN QUAD B -Y	T	3			
S R6407	V SM RJ	DIR COIL MON QUAD B +Y	T	3			
S R6408	V SM RJ	DIR COIL MON QUAD D -Y	T	3			
S R6409	V SM RJ	DIR COIL MCN QUAD B +R	T	3			
S R6410	V SM RJ	DIR CCIL MCN QUAD D -R	T	3			
S R6411	V SM RJ	DIR COIL MON QUAD C +R	T	3			
S R6412	V SM RJ	DIR COIL MON QUAD B -R	T	3			
S R6413	V SM RJ	DIR COIL MON QUAD A +R	T	3			
S R6414	V SM RJ	DIR COIL MON QUAD C -R	T	3			
S R6415	V SM RJ	DIR COIL MCN QUAD C +R	T	3			
S R6416	V SM RJ	DIR COIL MON QUAD A -R	T	3			
S R6481	V SM RJ	AUTO COIL MON QUAD C +P	T	3			



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APJ110C APPENDIX C M / S M / B L O C K I M E A S U R E M E N T L I S T  
SUBSYSTEM 17  
REACTION CONTROL

MEAS.	IN	MEASUREMENT DESCRIPTION	FM/TR	DISP	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
							LOW	HIGH	
S R6482	V SM	RJ AUTO COIL MCN QUAD A -P	T	T	3				
S R6483	V SM	RJ AUTO CCIL MJN QUAD A +P	T	T	3				
S R6484	V SM	RJ AUTO COIL MJN QUAD C -P	T	T	3				
S R6485	V SM	RJ AUTO COIL MJN QUAD D +Y	T	T	3				
S R6486	V SM	RJ AUTO CCIL MJN QUAD B -Y	T	T	3				
S R6487	V SM	RJ AUTO CCIL MJN QUAD B +Y	T	T	3				
S R6488	V SM	RJ AUTO CCIL MJN QUAD D -Y	T	T	3				
S R6489	V SM	RJ AUTO CCIL MCN QUAD B +R	T	T	3				
S R6490	V SM	RJ AUTO COIL MJN QUAD D -R	T	T	3				
S R6491	V SM	RJ AUTO CCIL MJN QUAD D +R	T	T	3				
S R6492	V SM	RJ AUTO COIL MJN QUAD B -R	T	T	3				
S R6493	V SM	RJ AUTO CCIL MJN QUAD A +R	T	T	3				
S R6494	V SM	RJ AUTO COIL MJN QUAD C -R	T	T	3				
S R6495	V SM	RJ AUTO COIL MJN QUAD C +R	T	T	3				
S R6496	V SM	RJ AUTO COIL MJN QUAD A -R	T	T	3				
S R7125	T TEMP	INU HEAD -P ENG SYS A	FQ		4	1	S/\$	+0	+500 DEG F
S R7128	T TEMP	INU HEAD +Y ENG SYS B	FQ		4	1	S/\$	+0	+500 DEG F



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## AP110C APOLLO CM / SM BLOCK 1 MEASUREMENT LIST

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SUBSYSTEM  
REACTION CONTROLMEAS. ID MEASUREMENT DESCRIPTION ACCESSIBILITY MCPF RESPONSE DATA RANGE LOCATION/REMARKS  
TM/TR DISP GSE SYRD LOW HIGH UNITS

S R7137 T TEMP INJ HEAD CW ENG SYS C FQ 4 1 S/S +0 +500 DEG F

S R7140 T TEMP INJ HEAD CCW ENG SYS D FQ 4 1 S/S +0 +500 DEG F



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## M E A S U R E M E N T L I S T

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L/V EMERGENCY DETECTION

SUBSYSTEM

SPACECRAFT

MEAS. ID

MEASUREMENT DESCRIPTION

TM/TR

DISP GSE SYRO

ACCESSIBILITY

MCPIF RESPONSE

DATA RANGE

LOW HIGH UNITS

LOCATION/REMARKS

L S0001 V Q BALL VECTOR SUM OUTPUT	PCM	S4	1	10	S/S	+0	+5 VDC
B S0016 X LAUNCH VEH GUIDANCE FAIL A	PCME	L	1	10	S/S	G FAIL	EVENT INSTRUMENT UNIT
B S0017 X LAUNCH VEH GUIDANCE FAIL B		L	1	1		G FAIL	EVENT INSTRUMENT UNIT
B S0020 X LAUNCH VEH RATE EXCESSIVE A	PCME	L	1	10	S/S	R_EX	EVENT INSTRUMENT UNIT
B S0021 X LAUNCH VEH RATE EXCESSIVE B		L	1	1		R_EX	EVENT INSTRUMENT UNIT
B S0030 X ENG NO 1 OUT A	PCME	L	1	10	S/S	E OUT	EVENT INSTRUMENT UNIT
B S0031 X ENG NO 1 OUT B		L	1	1		E OUT	EVENT INSTRUMENT UNIT
B S0032 X ENG NC 2 CUT A	PCME	L	1	10	S/S	E OUT	EVENT INSTRUMENT UNIT
B S0033 X ENG NO 2 OUT B		L	1	1		E OUT	EVENT INSTRUMENT UNIT
B S0034 X ENG NO 3 OUT A	PCME	L	1	10	S/S	E OUT	EVENT INSTRUMENT UNIT
B S0035 X ENG NO 3 OUT B		L	1	1		E OUT	EVENT INSTRUMENT UNIT
B S0036 X ENG NO 4 OUT A	PCME	L	1	10	S/S	E OUT	EVENT INSTRUMENT UNIT
B S0037 X ENG NC 4 OUT B		L	1	1		E OUT	EVENT INSTRUMENT UNIT
B S0038 X ENG NO 5 OUT A	PCME	L	1	10	S/S	E OUT	EVENT INSTRUMENT UNIT
B S0039 X ENG NO 5 OUT B		L	1	1		E OUT	EVENT INSTRUMENT UNIT
B S0060 X LIFT OFF SIGNAL A	PCME		2 x 10		S/S	L	OFF EVENT
B S0061 X LIFT OFF SIGNAL B	PCME		2 x 10		S/S	L	OFF EVENT



<u>APJ1LOC</u>	<u>A P O L L O</u>	<u>C M / S M</u>	<u>B L O C K</u>	<u>I</u>	<u>M E A S U R E M E N T</u>	<u>L I S T</u>	<u>VL-01</u>
<u>SUBSYSTEM</u>					<u>DATA RANGE</u>	<u>LOCATION/REMARKS</u>	
	<u>MEAS.</u>	<u>ID</u>	<u>MEASUREMENT DESCRIPTION</u>	<u>TM/TR</u>	<u>ACCESSIBILITY</u>	<u>MC/PF RESPONSE</u>	<u>DATA RANGE</u>
					<u>GSE</u>	<u>SYRO</u>	<u>LOW</u> <u>HIGH</u> <u>UNITS</u>
S00080 X	FDS	ABORT REQUEST A		PCME	L	1	10
C	S0081 X	EDS ABORT REQUEST B			L	1	S/S
L	S0090 X	TOWER PHYS. SEPARATION MON A	PCM			2 X 10	S/S
L	S0091 X	TOWER PHYS. SEPARATION MCN B	PCM			2 X 10	S/S
C	S0100 X	CM-SM PHYS. SEPARATION MON A	PCM			2 X 10	S/S - B1 AT L/O EVENT
C	S0101 X	CM-SM PHYS. SEPARATION MON B	PCM			2 X 10	S/S - B1 AT L/O EVENT
S	S0120 X	SM/ADAPTER PHYS. SEPARATION MON A	PCM			2 X 10	S/S - B1 AT L/O EVENT
S	S0121 X	SM/ADAPTER PHYS. SEPARATION MON B	PCM			2 X 10	S/S - B1 AT L/O EVENT
B	S0134 X	S-11 SECOND PLANE SEPARATION A	PCM			1	10
B	S0135 X	S-11 SECOND PLANE SEPARATION B					NOSEP SEP EVENT INSTRUMENT UNIT
C	S0150 X	MASTER CAUTION-WARNING CN	PCM			1	10
							S/S - WARN NO W EVENT



APJ110C APPENDIX C M / S M. B L O C K I M E A S U R E M E N T L I S T		VL-01			
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MEAS.	ID	MEASUREMENT DESCRIPTION	SPACECRAFT	17	VEH
C	T0008	V HF 455KC CSC LEVEL	IM/IR DISP GSE SYRO	MCPI RESPONSE	DATA RANGE LOW HIGH UNITS
C	T0009	V HF GSC TRANSMIT BUFFER LEVEL		A 3	
C	T0010	T TEMP SIGNAL CONDITIONER PACKAGE	AP	3 1	S/S *32 *250 DEG F
C	T0012	X TAPE MOTION MONITOR OPERATIONAL	PCME	2 10	S/S MOVE EVENT
C	T0013	X TAPE MOTION MONITOR R AND D	PCME	2 10	S/S MOVE EVENT
C	T0014	X SIG COND UNREG DC SUPPLY VOLTAGE		A 3 1	S/S
C	T0015	V SIG COND POS SUPPLY VOLTS	PCM+	A 2 x 10	S/S
C	T0016	V SIG COND NEG SUPPLY VOLTS	PCM+	A 2 x 10	S/S
C	T0017	V SENSOR EXCITATION VOLTS	PCM+	A 2 x 10	S/S
C	T0018	V SENSOR EXCITATION 10 VOLTS	PCM+	A 2 x 10	S/S
C	T0024	X HF RCVR UNREG B+ VOLTAGE		A 3	
C	T0036	E HF TRANSCIEVER RF OUTPUT POWER		RF 3	
C	T0037	F HF TRANSCIEVER RF OUTPUT FREQ		RF 3	
C	T0039	V HF RCVR AGC VOLTAGE		A 3	
C	T0042	V HF RCVR REG B+ VOLTAGE		A 3	
C	T0044	V HF RCVR AUDIO OUTPUT (3-WIRE)		A 3	
C	T0047	V HF XMTR AUDIO INPUT (3-WIRE)		A 3	



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MEAS.	IC	MEASUREMENT DESCRIPTION	TM/TR	DISP.GSE SYRO	DATA RANGE		LOCATION/REMARKS
					LOW	HIGH	
C	T0048	V HF XMTR DETECTED RF OUTPUT			A	3	
C	T0049	X VHF REC BEACON UNREG DC SUPPLY V			A	3	
C	T0056	V VHF/FM EXCITER -10V PWR. SUPPLY			A	3	
C	T0057	V VHF/FM PA FINAL AMP GRID VOLTS			A	3	
C	T0058	V VHF/FM PA MOD BIAS VOLTAGE			A	3	
C	T0060	V TV VIDEO OUTPUT	USM	3			
C	T0062	V VHF/FM XMTR AFC			A	3	
C	T0063	V VHF/FM EXCITER OUTPUT			A	3	
C	T0065	I TEMP VHF/FM XMTR	AP	3	1	S/S	+32 +250 DEG F
C	T0066	V VHF/FM XMTR +160V POWER SUPPLY			A	3	
C	T0069	V C-BAND PULSER OUTPUT WAVEFORM			A	3	
C	T0071	V C-BAND REC VIDEO 1			A	3	
C	T0072	V C-BAND REC VIDEO 2			A	3	
C	T0073	V C-BAND REC VIDEO 3			A	3	
C	T0074	V C-BAND REC VIDEO 4			A	3	
C	T0077	V C-BAND XPCNDR PS +20V			A	3	
C	T0078	X C-BAND XPCNDR PS +10V	AP	3	10	S/S	ON EVENT



APJ1LOC		A P O L L O _ C M / S M _ B L O C K _ I		M E A S U R E M E N T _ L I S T		VL-01	
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MEAS.	ID	MEASUREMENT DESCRIPTION		ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
		TM/TR	DISP GSE SYRO	LOW	HIGH	UNITS	
C	TCC79	V	C-BAND XPCNDR PS	-27V	A	3	
C	T0080	V	C-BAND MODULATION LOW VOLTAGE	B+	A	3	
C	T0082	C	C-BAND XPCNDR XTAL CURRENT	1	A	3	+0.2 - +0.8 MAMP
C	T0083	C	C-BAND XPCNDR XTAL CURRENT	2	A	3	+0.2 - +0.8 MAMP
C	T0084	C	C-BAND XPCNDR XTAL CURRENT	3	A	3	+0.2 - +0.8 MAMP
C	T0085	C	C-BAND XPCNDR XTAL CURRENT	4	A	3	+0.2 - +0.8 MAMP
C	T0089	V	C-BAND XMTR C/UTPUT MONITOR	PCM	A	2	S/S
C	TC090	E	C-BAND RF OUTPUT POWER		RF	3	
C	TCC91	F	C-BAND RF OUTPUT FREQUENCY		RF	3	
C	TC092	W	C-BAND TRANSPONDER DELAY		RF	3	
C	TO093	V	C-BAND RECEIVER SENSITIVITY		RF	3	
C	TC094	F	C-BAND RECEIVER BANDWIDTH		RF	3	
C	TO096	T	TEMP C-BAND XPCNDR (OUT STAGE)		AP	3	S/S
C	TO097	X	C-BAND UNREG DC SUPPLY VOLTAGE		A	3	+32 - +250 DEG F
C	TO098	V	C-BAND DECODER JUT		A	2	S/S
C	TCC99	V	C-BAND RF SW VERIFICATION VOLT		A	3	
C	TO102	V	HF XMTR REG B+ VOLTAGE		A	3	



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APOLLO COMMAND BLOCK I MEASUREMENT LIST

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MEAS.	IN	MEASUREMENT DESCRIPTION	TM/TR	DISP GSE SYRO	DATA RANGE		LOCATION/REMARKS
					LOW	HIGH	
C	T0103	V HF OSC RECEIVED BUFFER LEVEL		A	3		
C	T0120	X PCM BIT RATE CHANGE 8 BIT	PCM	A	2 X 10	S/S	
C	T0125	V PCM HI LEVEL 95 PERCENT REF	PCM+	A	2 X 10	S/S	0 5.0 VDC
C	T0126	V PCM HI LEVEL 15 PERCENT REF	PCM+		2 X 10	S/S	0 5.0 VDC
C	T0127	V PCM LO LEVEL 85 PERCENT REF	PCM+		2 X 1	S/S	0 .040 VDC
C	T0128	V PCM LO LEVEL 15 PERCENT REF	PCM+		2 X 1	S/S	.040 VDC
C	T0129	V PCM PWR SUPPLY VOLTAGE 1,+20V		A	3		
C	T0130	V PCM PWR SUPPLY VOLTAGE 2,-20V		A	3		
C	T0131	V PCM PWR SUPPLY VOLTAGE 3,+10V		A	3		
C	T0132	V PCM PWR SUPPLY VOLTAGE 4,+6V REG		A	3		
C	T0133	V PCM PWR SUPPLY VOLTAGE 5,+6V		A	3		
C	T0134	V PCM PWR SUPPLY VOLTAGE 6,+3V		A	3		
C	T0135	V PCM PWR SUPPLY VOLTAGE 7,-3V		A	3		
C	T0136	V PCM PWR SUPPLY VOLTAGE 8,+15V		A	3		
C	T0137	V PCM PWR SUPPLY VOLTAGE 9,-15V		A	3		
C	T0138	V PCM PWR SUPPLY VOLTAGE 10,-10V		A	3		
C	T0139	X CENTRAL TIMING UNREG SUPP VOLTS		A	3		



APJ110C A &gt; C L L O C M / S M -&gt; L O C K I M E A S U R E M E N T L I S T VL-01

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MEAS. ID	MEASUREMENT DESCRIPTION	IMTR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
					DISP	GSE SYRO	
C T0140 F CTE 512KC BUFFER OUTPUT 1			A	3			
C T0141 X CTE TIMING MODE MONITOR		PCME	A	2 10	S/S	INT	GN EVENT
C T0142 F CENTRAL TIMING GMT 32-BIT		PCMD		2 X 10	S/S		
C T0143 V CTE DC POWER SOURCE TP 2			A	3			
C T0144 F CTE EXT SYNC INPUT (1024KC)			A	3			
C T0147 V S-BAND REC AGC. VOLTAGE		PCM+	A	2 X 10	S/S		
C T0148 V S-BAND REC VCO OUTPUT LEVEL			A	3			
C T0179 T TEMP S-LAND XPCNDR (OUTPUT)			AP	3 1	S/S	+32	+250 DEG F
C T0180 E VHF/AM XMTR OUTPUT POWER			RF	3			
C T0181 F VHF/AM XMTR OUTPUT FREQUENCY			RF	3			
C T0183 V VHF/AM XMTR MODULATION			RF	3			
C T0191 V VHF/AM REG AGC. VOLTAGE		PCM	A	2 10	S/S		
C T0193 X VHF/AM XMTR UNREG DC SUPP VOLTS			A	3			
C T0194 T VHF/AM XMTR TEMP			AP	3 1	S/S	+32	+250 DEG F
C T0196 V VHF/AM RECEIVER SENSITIVITY			RF	3			
C T0197 V VHF/AM RECEIVER DISTORTION			RF	3			
C T0198 F VHF/AM RECEIVER FREQUENCY			RF	3			



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APJ110C APOLLO C M / S M BLOCK I MEASUREMENT LIST

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SUBSYSTEM  
COMMUNICATIONS AND INSTRUMENTATIONMEAS. ID MEASUREMENT DESCRIPTION ACCESSIBILITY MCPIF RESPONSE DATA RANGE LOCATION/REMARKS  
TM/TR DISP GSE SYRO LOW HIGH UNITS

C T0210 V S-BAND +15 V PWR SUPPLY VOLTAGE	A	3	+0	+16 VDC
C T0211 V S-BAND -15 V PWR SUPPLY VOLTAGE	A	3	-16	+0 VDC
C T0212 V S-BAND RCVR STATIC PHASE ERROR	PCM+	A	2	10 S/S
C T0213 V S-BAND XMTR FM OSC OUTPUT LEVEL	A	3	-	
C T0214 V S-BAND AUX OSC OUTPUT LEVEL	A	3	-	
C T0215 V S-BAND XMTR DETECTED RF OUTPUT	PCM	A	2	1 S/S
C T0216 T S-BAND PWR AMPLIFIER TEMP	AP	3	1	S/S +3.2 +250 DEG F
C T0218 V S-BAND PA ANODE SUPPLY VOLTAGE	A	3	-	
C T0219 V S-BAND PA CATHODE SUPP VOLTAGE	A	3	-	
C T0220 V S-BAND PA COLLECTOR SUPP VOLTAGE	A	3	-	
C T0221 C S-BAND COMB HELIX-ANODE CURRENT	A	3	-	
C T0222 E S-BAND RF OUTPUT PRI FREQUENCY	RF	3	-	
C T0224 E S-BAND RF OUTPUT SEC FREQUENCY	RF	3	-	
C T0225 V MOD PH DET UP-LNK SUBCARRIER OUT	A	3	-	
C T0230 E S-BAND PA RF OUTPUT BYPASS	RF	3	-	
C T0231 F S-BAND PA RF OUTPUT LOW POWER	RF	3	-	
C T0232 E S-BAND PA RF OUTPUT HIGH POWER	RF	3	-	



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MEAS.	TO	MEASUREMENT DESCRIPTION	IM/IR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS	
							DISP	GSE
C	T0244	V UDL CTE +AV EXCITATION	A	3				
C	T0245	V UDL NORMALIZED POWER	AP	3	1	S/S	0	+6.4 VDC
C	T0246	X UDL AGC DATA	A	3				
C	T0247	X UDL AGC DATA	A	3				
C	T0248	X UDL CTE RESET	A	3				
C	T0250	X UDL CTE ADVANCE DAYS	A	3				
C	T0251	X UDL CTE ADVANCE HOURS	A	3				
C	T0252	X UDL CTE ADVANCE MINUTES	A	3				
C	T0253	X UDL CTE ADVANCE SECONDS	A	3				
C	T0254	V UDL CTE PRIME POWER	A	3				
C	T0255	V UDL UHF AUDIO	"	A	3			
C	T0256	X UDL SUB-BIT DETECTOR AUDIO INPUT	A	3				
C	T0257	X UDL SUB-BIT DETECTOR OUTPUT	A	3				
C	T0258	V PMP TO KC DISCRIMINATOR OUTPUT	AP	3	1	S/S	0	1.5 VRMS
C	T0259	V UDL S-BAND AUDIO	A	3				
C	T0261	V UDL RECEIVER SIGNAL STRENGTH	PCM+	A	2 X 10	S/S		
C	T0262	V UDL SYS VALIDITY SIGNAL 8-BIT	PCMD	A	2 X 50	S/S		



## APJ1LOC A P O L L I C M / S M B L O C K I M E A S U R E M E N T L I S T VL-01

## SUBSYSTEM COMMUNICATIONS AND INSTRUMENTATION

MEAS. ID	MEASUREMENT DESCRIPTION	SPACECRAFT	ACCESSIBILITY		MCPIF RESPONSE	DATA RANGE	LOCATION/REMARKS
			TM/TR	DISP			
C T0315 X VHF/AM RCVR UNREG DC SUPP VOLT			A	3			
C T0317 V VHF/AM XMTR AUDIO INPUT			A	3			
C T0318 V VHF/AM RCVR AUDIO OUTPUT			A	3			
C T0319 V VHF/AM RCVR BIO-MED DATA OUTPUT			A	3			
C T0320 V VHF/AM XMTR DETECTED RF OUTPUT	PCM		A	2	100	S/S	
C T0321 V VHF/AM RCVR 12 V POWER SUPPLY			A	3			
C T0322 V VHF/AM XMTR 25 V POWER SUPPLY			A	3			
C T0323 V VHF/AM 150 VOLT MODULATOR			A	3			
C T0324 V VHF/AM 300 VOLT MODULATOR			A	3			
C T0325 V VHF/A4 XMTR FINAL AMP GRID VOLT			AP	3	1	S/S	
C T0326 T TEMP VHF RECOVERY BEACON			AP	3	1	S/S	+32 +248 DEG F
C T0327 E VHF RECQV BEACON RF OUTPUT PWR			RF	3			
C T0328 F VHF RECQV BEACON RF OUTPUT FREQ			RF	3			
C T0330 V VHF/FM XMTR PA DETECTED RF OUT	PCM		A	2	10	S/S	
C T0331 V VHF REC BEACON DET RF OUTPUT			A	3			
C T0333 T TEMP HF PA MODULE			AP	3	1	S/S	+32 +248 DEG F
C T0334 V VHF REC BEACON REG DC VOLTS			A	3			



MEAS.	ID	MEASUREMENT	DESCRIPTION	TM/TR	DISP GSE	MCPU RESPONSE	DATA RANGE		LOCATION/REMARKS
							LOW	HIGH	
C	T0335	X	PROGRAMMER INRD TIMING TRIGGER			A	3		
C	TG336	V	VHF RECOV BEACON +6 VDC REG VOLT			A	3		
C	T0337	E	GFE SURVIVAL BEACON RF GUT PWR			RF	3		
C	T0338	F	GFE SURVIVAL BEACON RF OUT FREQ			RF	3		
C	T0340	X	PCM TIMING SOURCE EXT OR INT	PCM		A	2	10	S/S INT EXIT EVENT
C	T0342	X	RESET COINCIDENCE			A	3		COIN EVENT
C	T0358	V	ADC PAM INPUT			A	3		
C	T0361	V	PCM A2 IFT DIGITAL MULTIPLEXER			A	3	+0 +3.8 VDC	
C	T0362	V	PCM A3 IFT DIGITAL MULTIPLEXER			A	3	+0 +3.8 VDC	
C	T0363	V	PCM A4 IFT DIGITAL MULTIPLEXER			A	3	+0 +3.8 VDC	
C	T0364	V	PCM A5 IFT DIGITAL MULTIPLEXER			A	3	+0 +3.8 VDC	
C	T0365	V	PCM A6 IFT DIGITAL MULTIPLEXER			A	3	+0 +3.8 VDC	
C	T0366	V	PCM A7 IFT DIGITAL MULTIPLEXER			A	3	+0 +3.8 VDC	
C	T0367	V	PCM A9 IFT PARALLEL START-STOP			A	3	+0 +3.8 VDC	
C	T0368	V	PCM A10 IFT OUTPUT REGISTER			A	3	+0 +3.8 VDC	
C	T0369	V	PCM A12 IFT PROGRAMMER MATRIX			A	3	+0 +3.8 VDC	
C	T037C	V	PCM A13 IFT PROGRAMMER CN1			A	3	+0 +3.8 VDC	



APJ1CC		A P U L L G... C M / S M		B L U C K I		M E A S U R E M E N T I L I S I		VL-01	
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MEAS.	ID	MEASUREMENT DESCRIPTION		IM/IR		ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	
								LOW	HIGH UNITS
C	T0371	V	PCM A14	IFT	PROGRAMMER CDB	A	3	+0	+3.8 VDC
C	T0372	V	PCM A15	IFT	PROGRAM CTR MATRIX	A	3	+0	+3.8 VDC
C	T0373	V	PCM A16	IFT	PROGRAM CTR MATRIX	A	3	+0	+3.8 VDC
C	T0374	V	PCM A4	IFT	LCL LEVEL AMP	A	3	+0	+3.8 VDC
C	T0375	V	PCM A19	IFT	HIGH SPEED GATES	A	3	+0	+3.8 VDC
C	T0376	V	PCM 50	PPS	OUTPUT	A	3	+0	+3.8 VDC
C	T0377	V	PCM A20	IFT	EMCU/DER	A	3	+0	+3.8 VDC
C	T0378	V	NRZ SERIAL	RATA		A	3	+0	+3.8 VDC
C	T0379	V	SUBCARRIER	REFERENCE	(512KC)	USM	3	+0	+3.8 VDC
C	T0380	V	DATA RATE	TIMING		USM	3	+0	+3.8 VDC
C	T0382	V	SUB FRAME	RATE TIMING (1PPS)		USM	3	+0	+3.8 VDC
C	T0383	V	RZ SERIAL	DATA		USM	3	+0	+3.8 VDC
C	T0384	V	INTERCOM-TWISTED	SHLDED PAIR		USM	3	+0	+3.8 VDC
C	T0402	F	CTE 512KC	BUFFER	OUTPUT 2	A	3	+0	+3.8 VDC
C	T0403	F	CTE 512KC	BUFFER	OUTPUT 3	A	3	+0	+3.8 VDC
C	T0405	F	CTE 6.4KC	BUFFER	OUTPUT 1	A	3	+0	+3.8 VDC
C	T0406	F	CTE 6.4KC	BUFFER	OUTPUT 2	A	3	+0	+3.8 VDC



APJ110C		A P C L L O . C M / S M		B L O C K 1		M E A S U R E M E N T L I S T		VL-01	
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MEAS.	ID	MEASUREMENT DESCRIPTION		ACCESSIBILITY		MC/PF RESPONSE		DATA RANGE	
		IM/MTX	GSE	DISP	SYRD	LOW	HIGH	UNITS	LOCATION/REMARKS
C	T0407	F	CTE	6.4KC BUFFER OUTPUT	3	A	3		
C	T0408	F	CTE	1CPS BUFFER OUTPUT	1	A	3		
C	T0409	F	CTE	1CPS BUFFER OUTPUT	2	A	3		
C	T0410	F	CTE	1CPS BUFFER OUTPUT	3	A	3		
C	T0411	F	CTE	1CPS BUFFER OUTPUT	4	A	3		
C	T0412	F	CTE	2048KC OUTPUT	1	A	3		
C	T0413	F	CTE	2048KC OUTPUT	2	A	3		
C	T0414	F	CTE	2048KC OUTPUT	3	A	3		
C	T0415	F	CTE	4KC BUFFER OUTPUT		A	3		
C	T0415	F	CTE	1 CYCLE PER 10 MINUTES TP		A	3		
C	T0417	F	CTE	10 CPS TEST POINT		"	A	3	
C	T0440	E	VHF/FM XMTR	C/OUTPUT POWER		RF	3		
C	T0441	F	VHF/FM XMTR	CARRIER FREQUENCY		RF	3		
C	T0442	F	VHF/FM XMTR	FREQUENCY DEVIATION		RF	3		
C	T0443	F	VHF/FM XMTR	FREQ DEV LINEARITY		RF	3		
C	T1000	V	SERIAL FCM	DATA INPUT		A	3		
C	T1002	V	SERIAL FCM	DATA OUTPUT		A	3		



APJ11CC	A O S L I C C M / S M	B L O C K I	M E A S U R E M E N T   L I S T			
			SPACECRAFT	17	SEPT 19, 1966	VL-01
MEAS. IC	M E A S U R E M E N T   D E S C R I P T I O N	T M / T R	ACCESSIONABILITY	MCPH RESPONSE	DATA RANGE	LOCATION/REMARKS
			DISP GSE	S Y R C	LOW - HIGH UNITS	
C	T1003 X DSE UNREG DC SUPPLY VOLTS		A	A	3	
C	T1005 V DIGITAL CLOCK RECORDER INPUT		A	A	3	
C	T1020 C DIGITAL RECORD HEAD CURRENT 1		A	A	3	
C	T1021 C DIGITAL RECORD HEAD CURRENT 2		A	A	3	
C	T1022 C DIGITAL RECORD HEAD CURRENT 3		A	A	3	
C	T1023 C DIGITAL RECORD HEAD CURRENT 4		A	A	3	
C	T1024 C DIGITAL RECORD HEAD CURRENT 5		A	A	3	
C	T1040 V DIGITAL PLAYBACK AMP OUTPUT 1		A	A	3	
C	T1041 V DIGITAL PLAYBACK AMP OUTPUT 2		A	A	3	
C	T1042 V DIGITAL PLAYBACK AMP OUTPUT 3		A	A	3	
C	T1043 V DIGITAL PLAYBACK AMP OUTPUT 4		A	A	3	
C	T1044 V DIGITAL PLAYBACK AMP OUTPUT 5		A	A	3	
C	T1070 C ANALOG RECORD HEAD CURRENT 1		A	A	3	
C	T1071 C ANALOG RECORD HEAD CURRENT 2		A	A	3	
C	T1072 C ANALOG RECORD HEAD CURRENT 3		A	A	3	
C	T1073 C ANALOG RECORD HEAD CURRENT 4		A	A	3	
C	T1074 C ANALOG RECORD HEAD CURRENT 5		A	A	3	



## APJ110C APOLLO CM / SM BLOCK I MEASUREMENT LIST

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MEAS.	IC	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						DISP	GSE SYRO	
C T1075	C	ANALOG RECORD HEAD CURRENT 6	T	A	A	3		
C T1076	C	ANALOG RECORD HEAD CURRENT 7	T	A	A	3		
C T1077	C	ANALOG RECORD HEAD CURRENT 8	T	A	A	3		
C T1078	C	ANALOG RECORD HEAD CURRENT 9	T	A	A	3		
C T1110	C	ANALOG P-AYBACK AMP OUTPUT 1	T	A	A	3		
C T1111	C	ANALOG P-AYBACK AMP OUTPUT 2	T	A	A	3		
C T1112	C	ANALOG PLAYBACK AMP OUTPUT 3	T	A	A	3		
C T1113	C	ANALOG PLAYBACK AMP OUTPUT 4	T	A	A	3		
C T1114	C	ANALOG PLAYBACK AMP OUTPUT 5	T	A	A	3		
C T1115	C	ANALOG PLAYBACK AMP OUTPUT 6	T	A	A	3		
C T1116	C	ANALOG PLAYBACK AMP OUTPUT 7	T	A	A	3		
C T1117	C	ANALOG PLAYBACK AMP OUTPUT 8	T	A	A	3		
C T1118	C	ANALOG PLAYBACK AMP OUTPUT 9	T	A	A	3		
C T1135	X	ERASE AMP OUTPUT	T	A	A	3		
C T1136	X	DSE ERASE MENTOR, REVERSE	T	A	A	3		
C T1140	V	POWER SUPPLY 1 VOLTAGE	T	A	A	3		
C T1141	V	POWER SUPPLY 2 VOLTAGE	T	A	A	3		



MEASUREMENT LIST						VL-01	
MEAS.	ID	MEASUREMENT DESCRIPTION	TM/IR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			DISP	GSE	SYRO	LOW	HIGH UNITS
C	T1142	V POWER SUPPLY 3 VOLTAGE		A	3		
C	T1176	V PMP LOW PASS FILTER OUTPUT		A	3	0	0.8 VPP
C	T1182	V PMP BIO-MED FM MIXING NETWORK		A	3		
C	T1185	V PMP FREQ DCUBLER INPUT		A	3		
C	T1190	V PMP BAND PASS FILTER OUTPUT		A	3	0	0.11 VRMS
C	T1198	V PMP TV INPUT TO MIXING NETWORK		A	3		
C	T1200	V PMP 1.25 MC SCO INPUT		A	3		
C	T1201	V PMP 1.25 MC SCO OUTPUT		AP	3	1	S/S 0 1.0 VDC
C	T1202	V PMP 1.024 MC BOPASS FILTER INPUT		A	3		
C	T1203	V PMP SCO MIXING NETWORK OUTPUT		A	3		
C	T1205	V PMP SCO INPUT 1		A	3		
C	T1206	V PMP SCO INPUT 2		A	3		
C	T1207	V PMP SCO INPUT 3		A	3		
C	T1208	V PMP SCO INPUT 4		A	3		
C	T1209	V PMP SCO INPUT 5		A	3		
C	T1210	V PMP SCO INPUT 6		A	3		
C	T1211	V PMP SCO INPUT 7		A	3		



APJ110C MEASUREMENT LIST VL-01

SUBSYSTEM  
COMMUNICATIONS AND INSTRUMENTATION  
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PAGE NO. 112MEAS. ID MEASUREMENT DESCRIPTION FM/TR MCPL RESPONSE DATA RANGE LOCATION/REMARKS  
DISP GSE SYRO LOW HIGH UNITS

C T1212 V PMP SCC INPUT 8	A	3	
C T1213 V PMP SCO INPUT 9	A	3	
C T1215 V PMP SCO OUTPUT 1	A	3	
C T1216 V PMP SCO OUTPUT 2	A	3	
C T1217 V PMP SCO OUTPUT 3	A	3	
C T1218 V PMP SCO OUTPUT 4	A	3	
C T1219 V PMP SCO OUTPUT 5	A	3	
C T1220 V PMP SCC OUTPUT 6	A	3	
C T1221 V PMP SCC OUTPUT 7	A	3	
C T1222 V PMP SCO OUTPUT 8	A	3	
C T1223 V PMP SCO OUTPUT 9	A	3	
C T1227 V PMP UP--VOICE DISCRIMINATOR OUT	AP	2	S/S 0 1.25 VRMS
C T1228 V PMP UP--VOICE DISCRIMINATOR INPUT	A	3	
C T1232 V PMP REG DC SUPPLY VOLTAGE	A	3	
C T1233 V PMP +23 VDC SUPPLY VOLTAGE	A	3	



MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY			MC/PF RESPONSE	DATA RANGE		LOCATION/REMARKS
			TMA/TR	DSP	GSE SYRO		LOW	HIGH	
C A0001	A X AXIS SPACECRAFT ACCEL	HIGH	FQ	4	0-30	CPS	-2	+10	G
C A0005	A Y AXIS SPACECRAFT ACCEL	HIGH	FQ	4	0-30	CPS	-0.5	+0.5	G
C A0007	A Z AXIS SPACECRAFT ACCEL	HIGH	FQ	4	0-30	CPS	-0.5	+0.5	G
L A0011	A Y AXIS TOWER ACCEL	LOW	FQ	4	0-30	CPS	-2.0	+2.0	G
L A0012	A Z AXIS TOWER ACCEL	LOW	FQ	4	0-30	CPS	-2.0	+2.0	G
C A0151	A X AXIS ENTRY ACCEL	LOW	FQ	4	10	S/S	+0	+20	G
C A0152	A Y AXIS ENTRY ACCEL	LOW	FQ	4	10	S/S	+0	+20	G
C A0153	A Z AXIS ENTRY ACCEL	LOW	FQ	4	10	S/S	+0	+20	G
C A0210	T TEMP TWR LEG WELL WALL 135 DEG	LOW	FQ	4	1	S/S	-100	+750	DEG F
C A0211	T TEMP TWR LEG WELL WALL 225 DEG	LOW	FQ	4	1	S/S	-100	+750	DEG F
C A0212	T TEMP TWR LEG UMB CIN AT 225 DEG	LOW	FQ	4	1	S/S	-100	+750	DEG F
C A1401	S STRAIN AX AFT HS OUT Z-Z	LOW	FQ	4	10	S/S	-5000	+5000	UI/IN CENTER
C A1402	S STRAIN AX AFT HS IN Z-Z	LOW	FQ	4	10	S/S	-5000	+5000	UI/IN CENTER
C A1403	S STRAIN AX AFT HS OUT Y-Y	LOW	FQ	4	10	S/S	-5000	+5000	UI/IN CENTER
C A1404	S STRAIN AX AFT HS IN Y-Y	LOW	FQ	4	10	S/S	-5000	+5000	UI/IN CENTER
C A1441	T TEMP CM-SM UMB TUBE LOC 1	LOW	FQ	4	1	S/S	-100	+2000	DEG F
C A1442	T TEMP CM-SM UMB TUBE LOC 2	LOW	FQ	4	1	S/S	-100	+1500	DEG F BLOCK II UMB



APJ110C SUBSYSTEMS STRUCTURES	A P L L C . C M / S M - B L O C K I M E A S U R E M E N T L I S T	1.7	SPACECRAFT	FQ	MEASUREMENT DESCRIPTION		ACCESSIBILITY TR/IR	MCPIF RESPONSE DISP GSE SYRO	DATA RANGE LOW-HIGH UNITS	LOCATION/REMARKS
					MEAS. ID	DESCRIPTION				
C A1443 T TEMP CM-SM UMB TUBE LOC 3			FQ	FQ	4	1	S/S	-100 +1000 DEG F BLOCK II UMB		
C A1444 T TEMP CM-SM UMB TUBE LOC 4			FQ	FQ	4	1	S/S	-100 +1000 DEG F BLOCK II UMB		
C A1445 T TEMP CM-SM UMB BRANCH A LOC 1			FQ	FQ	4	1	S/S	-100 +2000 DEG F BLOCK II UMB		
C A1446 T TEMP CM-SM UMB BRANCH A LOC 2			FQ	FQ	4	1	S/S	-100 +2000 DEG F BLOCK II UMB		
C A1447 T TEMP CM-SM UMB BRANCH A LOC 3			FQ	FQ	4	1	S/S	-100 +1500 DEG F BLOCK II UMB		
C A1448 T TEMP CM-SM UMB BRANCH A LOC 4			FQ	FQ	4	1	S/S	-100 +1500 DEG F BLOCK II UMB		
C A1449 T TEMP CM-SM UMB BRANCH A LOC 5			FQ	FQ	4	1	S/S	-100 +1000 DEG F BLOCK II UMB		
C A1450 T TEMP CM-SM UMB BRANCH A LOC 6			FQ	FQ	4	1	S/S	-100 +1000 DEG F BLOCK II UMB		
C A1451 T TEMP CM-SM UMB CONNECTOR LOC A			FQ	FQ	4	1	S/S	-100 +1500 DEG F BLOCK II UMB		
C A1452 T TEMP CM-SM UMB HEAT SINK LOC 3			FQ	FQ	4	1	S/S	-100 +750 DEG F BLOCK II UMB		
C A1453 T TEMP CM-SM UMB SUPT TUBE LOC C			FQ	FQ	4	1	S/S	-100 +750 DEG F BLOCK II UMB		
C A1454 T TEMP CM-SM UMB BRANCH A LOC 7			FQ	FQ	4	1	S/S	-100 +750 DEG F BLOCK II UMB		
C A1455 T TEMP CM-SM UMB CON TO IN-STRUCT			FQ	FQ	4	1	S/S	-100 +750 DEG F BLOCK II UMB		
C A1461 T TEMP AFT HS TENSION TIE BL			FQ	FQ	4	1	S/S	-100 +750 DEG F		
C A1462 T TEMP CM TENSION TIE BOLT FITTING			FQ	FQ	4	1	S/S	-100 +750 DEG F		
C A1463 T TEMP CM TENSION TIE BOLT NUT			FQ	FQ	4	1	S/S	-100 +750 DEG F		
C A1474 T TEMP SHEAR PAW 5-A			FQ	FQ	4	1	S/S	+32 +3500 DEG F YCL4, ZC-64, +1IN		



APJ110C	A P O L L O C M / S M	B L O C K I	M E A S U R E M E N T . L I S T	VL-01	SUBSYSTEM						
					STRUCTURES	MEAS.	IN	MEASUREMENT DESCRIPTION	TM/TR	DISP	GSE
									MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
									LOW	HIGH	UNITS
C A1475	T TEMP	SHEAR PAD 5-B	FQ			4	1	S/S	+32 +3500 DEG F	YC14,ZC-64,+4IN	
C A1476	T TEMP	SHEAR PAD 5-C	FQ			4	1	S/S	+32 +2500 DEG F	YC14,ZC-64,+8IN	
C A1477	T TEMP	SHEAR PAD 5 BL	FQ			4	1	S/S	-100 +750 DEG F	YC14,ZC-64,BL	
C A1478	T TEMP	NEAR SHEAR PAD 3	FQ			4	1	S/S	-100 +750 DEG F	YC-52,ZC27	
C A1479	T TEMP	NEAR SHIFAR PAD 5	FQ			4	1	S/S	-100 +750 DEG F	YC12,ZC-51	
C A1480	T TEMP	SHEAR PAD 3 FIBERGLASS BL	FQ			4	1	S/S	-100 +750 DEG F	YC-58,ZC22	
C A1481	T TEMP	SHEAR PAD 5 FIBERGLASS BL	FQ			4	1	S/S	-100 +750 DEG F	YC13,ZC-57	
C A1940	S STRAIN	AX AFT HS OUT RADIAL	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS	56,90DEG	
C A1941	S STRAIN	AX AFT HS IN RADIAL	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS	56,90DEG	
C A1942	S STRAIN	AX AFT HS OUT TANG	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS	57,90DEG	
C A1943	S STRAIN	AX AFT HS IN TANG	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS	57,90DEG	
C A1944	S STRAIN	AX AFT HS OUT RADIAL	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS	56,180DEG	
C A1945	S STRAIN	AX AFT HS IN RADIAL	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS	56,180DEG	
C A1946	S STRAIN	AX AFT HS OUT TANG	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS	57,180DEG	
C A1947	S STRAIN	AX AFT HS IN TANG	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS	57,180DEG	
C A1948	S STRAIN	AX AFT HS OUT RADIAL	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS	56,0DEG	
C A1949	S STRAIN	AX AFT HS IN RADIAL	FQ			4	10	S/S	-5000 +5000 UI/IN RADIUS	56,0DEG	



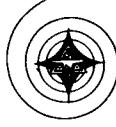
APJ110C SUBSYSTEM STRUCTURES	MEAS. ID	MEASUREMENT DESCRIPTION	MEASUREMENT LIST			DATA RANGE LOW	DATA RANGE HIGH	UNITS	LOCATION/REMARKS
			TM/TR DISP GSE	MCPF RESPONSE SYRQ	PAGE NO.				
		SPACECRAFT 17				SEPT 19, 1966	FQ		
C A1950 S STRAIN AX AFT HS OUT TANG	FQ		4	10	S/S	-5000	+5000	UI/IN	RADIUS 57,0DEG
C A1951 S STRAIN AX AFT HS IN TANG	FQ		4	10	S/S	-5000	+5000	UI/IN	RADIUS 57,0DEG
S A2020 S STRAIN AX TENSION BOLT BEAM 2	FQ		4	0-200	CPS	+0	+40K	LBS	BEAM 2
S A2021 G STRAIN AX TENSION BOLT BEAM 4	FQ		4	0-30	CPS	+0	+40K	LBS	BEAM 4
S A2022 G STRAIN AX TENSION BOLT BEAM 6	FQ		4	0-80	CPS	+0	+40K	LBS	BEAM 6
S A2210 D X AXIS VIR SM AFT BLKHD NEAR FC	FQ		4	2K	CPS	-75	+75	G	X5203, 64R, 1280DEG
S A2211 D RADIAL VIR SM AFT BLKHD NEAR FC	FQ		4	2K	CPS	-75	+75	G	X5203, 64R, 1280DEG
S A2212 D X AXIS VIR HE PRESS PANEL	FQ		4	2K	CPS	-500	+500	G	X5268, 50R, 1520DEG
S A2213 D TANG VIR HE PRESS PANEL	FQ		4	2K	CPS	-500	+500	G	X5268, 50R, 1520DEG
S A2214 D Y AXIS VIR SM O2 TANK MOUNT	FQ		4	250	CPS	-20	+20	G	X5333, 47.5R, 2900DEG
S A2215 D Z AXIS VIR SM O2 TANK MOUNT	FQ		4	250	CPS	-20	+20	G	X5333, 47.5R, 2900DEG
S A2216 D RADIAL VIR SM BEAM 4 AND SHELL	FQ		4	1K	CPS	-50	+50	G	X5333, 47.5R, 2900DEG
S A2217 D TANG VIR SM BEAM 4 AND SHELL	FQ		4	1K	CPS	-50	+50	G	X5355, 76R, 1520DEG
S A2218 C RADIAL VIR SM EPS RADIATOR PANEL	FQ		4	500	CPS	-75	+75	G	X5238, 76R, 3150DEG
C A2530 D Y AXIS VIR CM LEB KICKRING	FQ		4	2K	CPS	-50	+50	G	XC42.6, YC-42, ZC33
C A2531 D Z AXIS VIR CM LEB KICKRING	FQ		4	2K	CPS	-50	+50	G	XC42.6, YC-42, ZC33
C A2532 D X AXIS VIR CM LEB HNYCMB BLKHD	FQ		4	1K	CPS	-25	+25	G	XC28, YC20.8, ZC33



APJ110C		A P C L L U C M / S M		B L N C K I		M E A S U R E M E N T L I S T		V L - 0 1	
S U B S Y S T E M		S T R U C T U R E S		S P A C E C R A F T		1 7		F Q	
M E A S .	I D	M E A S U R E M E N T D E S C R I P T I O N		T M / T R	A C C E S S I B I L I T Y	M C P F	R E S P O N S E	D A T A R A N G E	L O C A T I O N / R E M A R K S
C	A2533	D Z	A X I S V I A C M L E U H N Y C M B B L K H D	F Q	4	1 K	C P S	-25 +25 G	X C 28, Y C 20 +8, Z C 33
C	A2534	O X	A X I S V I B C M L E S S E P M E C H	F Q	4	2 K	C P S	-200 +200 G	X C 81, Y C 24, Z C -24
C	A2535	O R A D I A L	V I B C M L E S S E P W E C H	F Q	4	2 K	C P S	-200 +200 G	X C 81, Y C 24, Z C -24
C	A3360	K F W D	H S R A D I A T I O N G A G E L O C 2	F Q	4	1	S / S	+0 +50 B / F / S	X C 50, 90 D E G
C	A3361	K F W D	H S R A D I A T I O N G A G E L O C 15	F Q	4	1	S / S	+0 +50 B / F / S	X C 50, 270 D E G
C	A3363	K A F T	H S R A D I A T I O N G A G E L O C 3	F Q	4	1	S / S	+0 +1200 B / F / S	Z C 55, Y C 0
C	A3364	K A F T	H S R A D I A T I O N G A G E L O C 7	F Q	4	1	S / S	+0 +1200 B / F / S	Z C -50, Y C 0
C	A3401	R	F L U X U M B I L I C A L L O C 1	F Q	4	1	S / S	+0 +150 B / F / S	U M B A T 90 D E G
C	A3402	R	F L U X U M B I L I C A L L O C 2	F Q	4	1	S / S	+0 +150 B / F / S	U M B A T 90 D E G
C	A3600	T	T F M P A T T A C H R I N G A T 90 D E G	F Q	"	4	S / S	-100 +750 D E G F	X C 43, 90 D E G
C	A3601	T	T F M P A T T A C H R I N G A T 270 D E G	F Q	4	1	S / S	-100 +750 D E G F	X C 43, 270 D E G
C	A3640	T	T T - 4 P S T R I N G E R S	F Q	4	1	S / S	-100 +750 D E G F	X C 50, 90 D E G
C	A3641	T	T E M P S T R I N G E R 1 0	F Q	4	1	S / S	-100 +750 D E G F	X C 50, 181.7 D E G
C	A3642	T	T E M P S T R I N G E R 1 2 C C R E W H A T C H	F Q	4	1	S / S	-100 +750 D E G F	X C 50, 247 D E G
C	A5010	R	F L U X A F T H S L O C 1	F Q	4	1	S / S	+0 +1200 B / F / S	X C 0, Y C 0, Z C 0
C	A5011	R	F L U X A F T H S L O C 2	F Q	4	1	S / S	+0 +1500 B / F / S	Z C 39, 90 D E G
C	A5012	R	F L U X A F T H S L O C 3	F Q	4	1	S / S	+0 +1500 B / F / S	Z C 55, 90 D E G

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SID 63-517



APJ110C APP L L Q C M / S M - B L D C K I MEASUREMENT LIST VL-01

SUBSYSTEM<sup>™</sup>  
STRUCTURES

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FQ

MEAS.	ID	MEASUREMENT DESCRIPTION	IM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE UNITS		LOCATION/REMARKS
						LOW	HIGH	
C A5013	R FLUX AFT HS LOC 4	FQ		4	S/S	+0	+1500	B/F/S ZC65, 90DEG
C A5014	R FLUX AFT HS LOC 5	FQ		4	S/S	+0	+1200	B/F/S ZC72, 90DEG
C A5015	R FLUX AFT HS LOC 6	FQ		4	S/S	+0	+750	B/F/S ZC76, 90DEG
C A5016	R FLUX AFT HS LOC 7	FQ		4	S/S	+0	+750	B/F/S ZC-50, 270DEG
C A5017	R FLUX AFT HS LOC 3	FQ		4	S/S	+0	+1000	3/F/S YC50, 0DEG
C A5018	R FLUX AFT HS SHEAR PAD 3	FQ		4	S/S	+0	+1500	B/F/S YC-58, 7C22
C A5019	R FLUX AFT HS SHEAR PAD 5	FQ		4	S/S	+0	+1500	B/F/S YC14, ZC-64
C A5020	R FLUX AFT HS SHFAR PAD 5	FQ		4	S/S	+0	+1500	B/F/S YC12, ZC-51
C A5040	P AFT HT SHLD BNDRY STATIC PRESS 1	FQ		4	S/S	+0	+10	PSIA XCO, YCO, ZCO
C A5041	P AFT HT SHLD BNDRY STATIC PRESS 2	FQ		4	S/S	+0	+10	PSIA ZC39, 90DEG
C A5042	P AFT HT SHLD BNDRY STATIC PRESS 3	FQ		4	S/S	+0	+10	PSIA ZC55, 90DEG
C A5043	P AFT HT SHLD BNDRY STATIC PRESS 4	FQ		4	S/S	+0	+10	PSIA ZC65, 90DEG
C A5044	P AFT HT SHLD BNDRY STATIC PRESS 5	FQ		4	S/S	+0	+10	PSIA ZC72, 90DEG
C A5045	P AFT HT SHLD BNDRY STATIC PRESS 6	FQ		4	S/S	+0	+5	PSIA ZC76, 90DEG
C A5046	P AFT HT SHLD BNDRY STATIC PRESS 7	FQ		4	S/S	+0	+5	PSIA ZC-50, 180DEG
C A5060	R CHAR AFT HS LOC 7	FQ		4	S/S	*14	.98 IN	ZC-50, 270DEG, .12IN
C A5061	R CHAR AFT HS LOC 5	FQ		4	S/S	*21	1.47 IN	ZC72, 90DEG, 0.18INC

APJ110C	MEASUREMENT LIST										VL-01	
	SUBSYSTEM STRUCTURES		SPACECRAFT		MEASUREMENT ID		DESCRIPTION		ACCESSIBILITY		DATA RANGE	
								TM/TR	DISP GSE	SYRD	LOW HIGH UNITS	LOCATION/REMARKS
C A5080 T TEMP AFT HS LOC 1	FQ							4	1	S/S	+32 +750 DEG F XCO, YCO, ZCO	
C A5C85 T TEMP AFT HS LOC 2	FQ							4	1	S/S	+32 +750 DEG F ZC39, 90DEG	
C A5C90 T TEMP AFT HS LOC 3	FQ							4	1	S/S	+32 +750 DEG F ZC55, 90DEG	
C A5C95 T TEMP AFT HS LOC 4	FQ							4	1	S/S	+32 +750 DEG F LC65, 90DEG	
C A5100 T TEMP AFT HS LOC 5 BL	FQ							4	1	S/S	+32 +750 DEG F ZC72, 90DEG, BL	
C A5101 T TEMP AFT HS LOC 5	FQ							4	1	S/S	+32 +1500 DEG F ZC72, 90DEG, 0.9IN	
C A5102 T TEMP AFT HS LOC 5	FQ							4	1	S/S	+32 +2500 DEG F ZC72, 90DEG, 0.6IN	
C A5103 T TEMP AFT HS LOC 5	FQ							4	1	S/S	+32 +3500 DEG F ZC72, 90DEG, 0.3IN	
C A5104 T TE42 AFT HS LOC 5	FQ							4	1	S/S	+32 +5000 DEG F ZC72, 90DEG, 0.1IN	
C A5105 T TEMP AFT HS LOC 6 BL	FQ							4	1	S/S	+32 +750 DEG F ZC76, 90DEG, BL	
C A5110 T TEMP AFT HS LOC 7	FQ							4	1	S/S	+32 +3500 DEG F ZC-50, 270DEG, .05IN	
C A5111 T TEMP AFT HS LOC 7	FQ							4	1	S/S	+32 +3500 DEG F ZC-50, 270DEG, .15IN	
C A5112 T TEMP AFT HS LOC 7	FQ							4	1	S/S	+32 +2500 DEG F ZC-50, 270DEG, .3IN	
C A5113 T TEMP AFT HS LOC 7	FQ							4	1	S/S	+32 +2000 DEG F ZC-50, 270DEG, .6IN	
C A5114 T TEMP AFT HS LOC 7	FQ							4	1	S/S	+32 +750 DEG F ZC-50, 270DEG, BL	
C A5115 T TEMP AFT HS LOC 8 BL	FQ							4	1	S/S	+32 +750 DEG F YC50, 0DEG, BL	
C A5550 R FLUX SIDE HS LOC 1	FQ							4	1	S/S	+150 B/F/S XC23, 90DEG	

MEAS.	ID	MEASUREMENT DESCRIPTION	TIME/TRANSIT	DISP/GSE	MCPF RESPONSE	SYRO	DATA RANGE		LOCATION/REMARKS
							LOW	HIGH	
C A5551	R	FLUX SIDE HS LOC 2	FQ	4	1	S/S	+0	+100	B/F/S XC50, 90DEG
C A5552	R	FLUX SIDE HS LOC 3	FQ	4	1	S/S	+0	+100	B/F/S XC80, 90DEG
C A5553	R	FLUX FWD HS LOC 4	FQ	4	1	S/S	+0	+75	B/F/S XC104, 90DEG
C A5554	R	FLUX SIDE HS LOC 5	FQ	4	1	S/S	+0	+100	B/F/S XC23, 135DEG
C A5555	R	FLUX SIDE HS LOC 6	FQ	4	1	S/S	+0	+75	B/F/S XC80, 135DEG
C A5556	R	FLUX SIDE HS LOC 7	FQ	4	1	S/S	+0	+75	B/F/S XC20, 180DEG
C A5557	R	FLUX SIDE HS LOC 8	FQ	4	1	S/S	+0	+50	B/F/S XC50, 180DEG
C A5558	R	FLUX SIDE HS LOC 9	FQ	4	1	S/S	+0	+50	B/F/S XC80, 180DEG
C A5559	R	FLUX FWD HS LOC 10	FQ	4	1	S/S	+0	+50	B/F/S XC104, 180DEG
C A5560	R	FLUX SIDE HS LOC 11	FQ	4	1	S/S	+0	+75	B/F/S XC20, 225DEG
C A5561	R	FLUX SIDE HS LOC 12	FQ	4	1	S/S	+0	+50	B/F/S XC50, 225DEG
C A5562	R	FLUX SIDE HS LOC 13	FQ	4	1	S/S	+0	+50	B/F/S XC80, 225DEG
C A5563	R	FLUX SIDE HS LOC 14	FQ	4	1	S/S	+0	+75	B/F/S XC20, 270DEG
C A5564	R	FLUX SIDE HS LOC 15	FQ	4	1	S/S	+0	+50	B/F/S XC50, 270DEG
C A5565	R	FLUX SIDE HS LOC 16	FQ	4	1	S/S	+0	+50	B/F/S XC80, 270DEG
C A5566	R	FLUX FWD HS LOC 17	FQ	4	1	S/S	+C	+50	B/F/S XC104, 270DEG
C A5580	P	PRESS SIDE HS LOC 1	FQ	4	1	S/S	+0	+1 PSIA	XC23, 90DEG

APJ110C	A P O L L O C	C M / S M	B L O C K I	M E A S U R E M E N T L I S T				V L - 0 1
				S U B S Y S T E M	S T R U C T U R E S	S P A C E C R A F T	1 7	
M E A S .	I D	M E A S U R E M E N T	D E S C R I P T I O N	T M / I R	A C C E S S I B I L I T Y	M C P F R E S P O N S E	D A T A R A N G E	L O C A T I O N / R E M A R K S
C A5581	P	P R E S S	S I D E H S L O C 2	F Q	4	1	S / S	+ 0 + 0 . 5 P S I A X C 5 0 , 9 0 D E G
C A5582	P	P R E S S	S I D E H S L O C 3	F Q	4	1	S / S	+ 0 + 0 . 5 P S I A X C 8 0 , 9 0 D E G
C A5583	P	P R E S S	F W D H S L O C 4	F Q	4	1	S / S	+ 0 + 0 . 5 P S I A X C 1 0 4 , 9 0 D E G
C A5584	P	P R E S S	S I D E H S L O C 5	F Q	4	1	S / S	+ 0 + 0 . 3 P S I A X C 2 3 , 1 3 5 D E G
C A5586	P	P R E S S	S I D E H S L O C 7	F Q	4	1	S / S	+ 0 + 0 . 3 P S I A X C 2 0 , 1 8 0 D E G
C A5588	P	P R E S S	S I D E H S L O C 9	F Q	4	1	S / S	+ 0 + 0 . 3 P S I A X C 8 0 , 1 8 0 D E G
C A5590	P	P R E S S	S I D E H S L O C 1 1	F Q	4	1	S / S	+ 0 + 0 . 3 P S I A X C 2 0 , 2 2 5 D E G
C A5593	P	P R E S S	S I D E H S L O C 1 4	F Q	4	1	S / S	+ 0 + 0 . 3 P S I A X C 2 0 , 2 7 0 D E G
C A5595	P	P R E S S	F W D H S L O C 1 6	F Q	4	1	S / S	+ 0 + 0 . 3 P S I A X C 8 0 , 2 7 0 D E G
C A5610	R	C H A R	S I D E H S L O C 1	F Q	4	1	S / S	. 1 0 . 7 0 I N X C 2 3 , 9 0 D E G 0 . 1 I N C
C A5611	R	C H A R	S I D E H S L O C 2	F Q	4	1	S / S	. 0 9 . 6 3 I N X C 5 0 , 9 0 D E G , 0 . 1 I N C
C A5612	R	C H A R	S I D E H S L O C 3	F Q	4	1	S / S	. 0 9 . 6 3 I N X C 8 0 , 9 0 D E G , 0 . 1 I N C
C A5613	R	C H A R	F W D H S L O C 4	F Q	4	1	S / S	. 0 9 . 6 3 I N X C 1 0 4 , 9 0 D E G , 0 . 0 8 I N C
C A5614	R	C H A R	S I D E H S L O C 5	F Q	4	1	S / S	. 0 9 . 6 3 I N X C 2 3 , 1 3 5 D E G , 0 . 0 8 I N C
C A5615	R	C H A R	S I D E H S L O C 7	F Q	4	1	S / S	. 0 9 . 6 3 I N X C 2 0 , 1 8 0 D E G , 0 . 0 8 I N C
C A5617	R	C H A R	S I D E H S L O C 8	F Q	4	1	S / S	. 0 6 . 4 2 I N X C 5 0 , 1 8 0 D E G , 0 . 0 8 I N C
C A5618	R	C H A R	S I D E H S L O C 9	F Q	4	1	S / S	. 0 5 . 4 2 I N X C 8 0 , 1 8 0 D E G , 0 . 0 8 I N C

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SUBSYSTEM  
STRUCTURES

## APPLICATION CMM / SMM BLOCK I MEASUREMENT LIST

SPACFCRAFT

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## MEAS. ID MEASUREMENT DESCRIPTION

MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR	DISP GSE SYRQ	ACCESSIBILITY MCPF RESPNSE	DATA RANGE			LOCATION/REMARKS
					LOW	HIGH	JUNITS	
C A5619 R CHAR FWD HS LCC 1C	FQ			4 1	S/S	.06	.42	IN XC104,180DEG,.08INC
C A5620 R CHAR SIDE HS LOC 11	FQ			4 1	S/S	.09	.63	IN XC20,225DEG,.08INC
C A5623 R CHAR SIDE HS LOC 14	FQ			4 1	S/S	.09	.63	IN XC20,270DEG,.08INC
C A5624 R CHAR SIDE HS LOC 15	FQ			4 1	S/S	.06	.42	IN XC50,270DEG,.06INC
C A5625 R CHAR SIDE HS LOC 16	FQ			4 1	S/S	.06	.42	IN XC80,270DEG,.06INC
C A5626 R CHAR FWD HS LCC 17	FQ			4 1	S/S	.06	.42	IN XC104,270DEG,.06INC
C A5700 T TEMP SIDE HS LCC 1-A	FQ			4 1	S/S	-100	+2500	DEG F XC23,90DEG,.05IN
C A5701 T TEMP SIDE HS LOC 1-B	FQ			4 1	S/S	-100	+2000	DEG F XC23,90DEG,.2IN
C A5702 T TEMP SIDE HS LOC 1-C	FQ			4 1	S/S	-100	+1500	DEG F XC23,90DEG,.4IN
C A5703 T TEMP SIDE HS LCC 1 BL	FQ			4 1	S/S	-100	+750	DEG F XC23,90DEG, BL
C A5705 T TEMP SIDE HS LOC 2-A	FQ			4 1	S/S	-100	+2500	DEG F XC50,90DEG,.05IN
C A5706 T TEMP SIDE HS LOC 2-B	FQ			4 1	S/S	-100	+2000	DEG F XC50,90DEG,.2IN
C A5707 T TEMP SIDE HS LOC 2-C	FQ			4 1	S/S	-100	+1500	DEG F XC50,90DEG,.4IN
C A5708 T TEMP SIDE HS LOC 2 BL	FQ			4 1	S/S	-100	+750	DEG F XC50,90DEG, BL
C A5710 T TEMP SIDE HS LOC 3-A	FQ			4 1	S/S	-100	+2500	DEG F XC80,90DEG,.05IN
C A5711 T TEMP SIDE HS LOC 3-B	FQ			4 1	S/S	-100	+2000	DEG F XC80,90DEG,.2IN
C A5712 T TEMP SIDE HS LCC 3-C	FQ			4 1	S/S	-100	+1500	DEG F XC80,90DEG,.4IN



APJ110C SUBSYSTEM STRUCTURES	A P C L L O . C M / S N . B L O C K I	M E A S U R E M E N T L I S T	VL-01	SEPT 19, 1966 PAGE NO. 11	FQ	L U C A T I O N / R E M A R K S		
						M E A S . I D	M E A S U R E M E N T D E S C R I P T I O N	T M / T R      D I S P G S E
C A5713 T TEMP SIDE HS LOC 3 BL		FQ				4	1	S/S -100 +750 DEG F XC80, 90DEG, BL
C A5715 T TEMP FWD HS LOC 4-A		FQ				4	1	S/S -100 +2500 DEG F XC104, 90DEG, .05IN
C A5716 T TEMP FWD HS LOC 4-B		FQ				4	1	S/S -100 +1500 DEG F XC104, 90DEG, .2IN
C A5717 T TEMP FWD HS LOC 4 BL		FQ				4	1	S/S -100 +750 DEG F XC104, 90DEG, BL
C A5720 T TEMP SIDE HS LOC 5-A		FQ				4	1	S/S -100 +2500 DEG F XC23, 13.5DEG, .05IN
C A5721 T TEMP SIDE HS LOC 5-B		FQ				4	1	S/S -100 +2000 DEG F XC23, 13.5DEG, .2IN
C A5722 T TEMP SIDE HS LOC 5-C		FQ				4	1	S/S -100 +1500 DEG F XC23, 13.5DEG, .4IN
C A5723 T TEMP SIDE HS LOC 5 BL		FQ				4	1	S/S -100 +750 DEG F XC23, 13.5DEG, BL
C A5725 T TEMP SIDE HS LOC 6 BL		FQ				4	1	S/S -100 +750 DEG F XC80, 13.5DEG, BL
C A5730 T TEMP SIDE HS LOC 7-A		FQ				4	1	S/S -100 +2500 DEG F XC20, 180DEG, .05IN
C A5731 T TEMP SIDE HS LOC 7-B		FQ				4	1	S/S -100 +2000 DEG F XC20, 180DEG, .2IN
C A5732 T TEMP SIDE HS LOC 7-C		FQ				4	1	S/S -100 +1500 DEG F XC20, 180DEG, .4IN
C A5733 T TEMP SIDE HS LOC 7 BL		FQ				4	1	S/S -100 +750 DEG F XC20, 180DEG, BL
C A5735 T TEMP SIDE HS LOC 8-A		FQ				4	1	S/S -100 +2500 DEG F XC50, 180DEG, .05IN
C A5736 T TEMP SIDE HS LOC 8-B		FQ				4	1	S/S -100 +2000 DEG F XC50, 180DEG, .2IN
C A5737 T TEMP SIDE HS LOC 8-C		FQ				4	1	S/S -100 +1500 DEG F XC50, 180DEG, .4IN
C A5738 T TEMP SIDE HS LOC 8 BL		FQ				4	1	S/S -100 +750 DEG F XC50, 180DEG, BL



MEAS. ID	MEASUREMENT DESCRIPTION	MEASUREMENT LIST			LOCATION/REMARKS
		LOW	HIGH	UNITS	
C A5740 T TEMP SIDE HS LOC 9-A	FQ	4	1	S/S	-100 +2500 DEG F XC80,180DEG,+05IN
C A5741 T TEMP SIDE HS LOC 9-B	FQ	4	1	S/S	-100 +2000 DEG F XC80,180DEG,+2IN
C A5742 T TEMP SIDE HS LOC 9 BL	FQ	4	1	S/S	-100 +750 DEG F XC80,180DEG, BL
C A5743 T TEMP FWD HS LOC 10-A	FQ	4	1	S/S	-100 +2500 DEG F XC104,180DEG,+05IN
C A5745 T TEMP FWD HS LOC 10-B	FQ	4	1	S/S	-100 +2000 DEG F XC104,180DEG,+2IN
C A5747 T TEMP FWD HS LOC 10 BL	FQ	4	1	S/S	-100 +750 DEG F XC104,180DEG, BL
C A5750 T TEMP SIDE HS LOC 11-A	FQ	4	1	S/S	-100 +2500 DEG F XC20,225DEG,+05IN
C A5751 T TEMP SIDE HS LOC 11-B	FQ	4	1	S/S	-100 +2000 DEG F XC20,225DEG,+2IN
C A5752 T TEMP SIDE HS LOC 11 BL	FQ	4	1	S/S	-100 +750 DEG F XC20,225DEG, BL
C A5755 T TEMP SIDE HS LOC 12 AL	FQ	4	1	S/S	-100 +750 DEG F XC50,225DEG, BL
C A5763 T TEMP SIDE HS LOC 13 BL	FQ	4	1	S/S	-100 +750 DEG F XC80,225DEG, BL
C A5765 T TEMP SIDE HS LOC 14-A	FQ	4	1	S/S	-100 +2500 DEG F XC20,270DEG,+05IN
C A5766 T TEMP SIDE HS LOC 14-B	FQ	4	1	S/S	-100 +2000 DEG F XC20,270DEG,+2IN
C A5767 T TEMP SIDE HS LOC 14 BL	FQ	4	1	S/S	-100 +750 DEG F XC20,270DEG, BL
C A5770 T TEMP SIDE HS LOC 15-A	FQ	4	1	S/S	-100 +2500 DEG F XC50,270DEG,+05IN
C A5771 T TEMP SIDE HS LOC 15-B	FQ	4	1	S/S	-100 +2000 DEG F XC50,270DEG,+2IN
C A5772 T TEMP SIDE HS LOC 15 BL	FQ	4	1	S/S	-100 +750 DEG F XC50,270DEG, BL



SUBSYSTEM STRUCTURES	APJ11CC	A P O L L O . C M / S . M . B . L . O C K . I .	M E A S U R E M E N T I S T . I . S . T .	SPACECRAFT	17	MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR DISP	ACCESSIBILITY	MCDF GSE SYRO	RESPONSE	DATA RANGE			LOCATION/REMARKS
												LOW	HIGH	UNITS	
C A5775	T TEMP SIDE HS LOC 16-A	FQ	4	1	S/S	-100	+2500	DEG F	X C80	270DEG	,05IN				
C A5775	T TEMP SIDE HS LOC 16-B	FQ	4	1	S/S	-100	+2000	DEG F	X C80	270DEG	,2IN				
C A5777	T TEMP SIDE HS LOC 16 BL	FQ	4	1	S/S	-100	+750	DEG F	X C80	270DEG	, BL				
C A5780	T TEMP FWD HS LOC 17-A	FQ	4	1	S/S	-100	+2500	DEG F	X C104	270DEG	,05IN				
C A5781	T TEMP FWD HS LOC 17-B	FQ	4	1	S/S	-100	+2000	DEG F	X C104	270DEG	,2IN				
C A5782	T TEMP FWD HS LOC 17 BL	FQ	4	1	S/S	-100	+750	DEG F	X C104	270DEG	, BL				
C A5811	T ASTRO-SEXT AREA STL HNYCMB LOC 1	FQ	4	1	S/S	-109	+1000	DEG F	X C75	92	DEG				
C A5812	T ASTRO-SEXT AREA STL HNYCMB LOC 2	FQ	4	1	S/S	-109	+1000	DEG F	X C75	92	DEG				
C A5813	T ASTRO-SEXT AREA AL HNYCMB LOC 1	FQ	4	1	S/S	-109	+300	DEG F	X C75	38	DEG				
C A5814	T ASTRO-SEXT AREA AL HNYCMB LOC 2	FQ	4	1	S/S	-109	+300	DEG F	X C75	38	DEG				
C A5815	T ASTRO-SEXT AREA AL HNYCMB LOC 3	FQ	4	1	S/S	-109	+300	DEG F	X C75	83	DEG				
C A5816	T ASTRO-SEXT AREA AL HNYCMB LOC 4	FQ	4	1	S/S	-109	+300	DEG F	X C75	98	DEG				
C A5817	T ASTRO-SEXT AREA AL HNYCMB LOC 5	FQ	4	1	S/S	-109	+300	DEG F	X C75	92	DEG				
C A5818	T ASTRO-SEXT AREA AL HNYCMB LOC 6	FQ	4	1	S/S	-109	+300	DEG F	X C75	94	DEG				
C A7446	T TEMP C-BAND ANT CUN AT 298 DEG	FQ	4	1	S/S	-100	+750	DEG F							
C A7447	T TEMP C-BAND ANT CON AT 165 DEG	FQ	4	1	S/S	-100	+750	DEG F							
C A7603	T TEMP C4 AIR VENT BAFFLE	FQ	4	1	S/S	-100	+1000	DEG F							



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MEASUREMENT ELEMENT LIST

## SUBSYSTEM

## STRUCTURES

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FQ

MEAS.	ID	MEASUREMENT DESCRIPTION	IM/TIR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						LOW	HIGH	
C	A76C7	T TEMP RCS FUEL DUMP BOLT/PLUG	FQ	4	1	S/S	-100	+750 DEG F
C	A7608	T TEMP HS TIE DOWN BOLT LOC A	FQ	4	1	S/S	+32	+750 DEG F
C	A76C9	T TEMP HS TIE DOWN BOLT LOC B	FQ	4	1	S/S	+32	+750 DEG F
C	A7610	T TEMP HS TIE DOWN BOLT LOC C	FQ	4	1	S/S	+32	+750 DEG F
C	A7674	T TEMP CM AIRLOCK TUNNEL +Z AXIS	FQ	4	1	S/S	-100	+400 DEG F AIRLOCK TUNNEL
C	A7675	L TEMP FWD RULKHEAD +Z AXIS	FQ	4	1	S/S	-120	+400 DEG F FWD BLKHD
C	A7676	T TEMP TOP SURFACE -P CM RCS ENG	FQ	4	1	S/S	-100	+750 DEG F -P CM RCS ENG
C	A7760	T TEMP PILOT CHUTE MORTAR	FQ	4	1	S/S	-100	+400 DEG F CHUTE MORTAR
C	A7761	L TEMP CHUTE HARNESS	FQ	4	1	S/S	-100	+400 DEG F CHUTE HARNESS
C	A7762	T TEMP MAIN CHUTE PACK	FQ	4	1	S/S	-100	+400 DEG F
C	A780C	T TEMP CM PRESS HULL AFT BLKHD 1	FQ	4	1	S/S	-100	+400 DEG F
C	A7801	L TEMP CM PRESS HULL AFT BLKHD 2	FQ	4	1	S/S	-100	+400 DEG F
C	A7808	T TEMP HATCH OUT WINDOW SUPT	FQ	4	1	S/S	-100	+750 DEG F HATCH WINDOW
C	A7820	T TEMP LH SIDE WINDOW BL	FQ	4	1	S/S	-100	+750 DEG F LH WINDOW
C	A7821	L TEMP LH SIDE WINDOW HS FRAME	FQ	4	1	S/S	-100	+750 DEG F LH WINDOW
C	A7822	T TEMP LH SIDE WINDOW IN FRAME	FQ	4	1	S/S	-100	+750 DEG F LH WINDOW
A	A7860	T TEMP SLA OUTER SHELL 1	FQ	4	1	S/S	+0	+600 DEG F XA785, 214DEG



APJ110C		A P O L L O C M / S M B L O C K I		M E A S U R E M E N T L I S T		VL-01		
SUBSYSTEM	STRUCTURES	SPACECRAFT		MEASUREMENT DESCRIPTION		DATA RANGE	LOCATION/REMARKS	
MEAS.	ID	MEASUREMENT	DESCRIPTION	TM/TR	DISP GSE SYRO	LOW	HIGH	UNITS
A	A7861	T TEMP	SLA CUTTER SHELL 2	FQ	4 1	S/S	+0	+600 DEG F XA599, 180DEG
A	A7862	T TEMP	SLA OUTFR SHELL 3	FQ	4 1	S/S	+0	+600 DEG F XA609, 180DEG
A	A7863	T TEMP	SLA OUTER SHELL 4	FQ	4 1	S/S	+0	+600 DEG F XA645, 174DEG
A	A7864	T TEMP	SLA CUTTER SHELL 5	FQ	4 1	S/S	+0	+600 DEG F XA730, 174DEG
A	A7865	T TEMP	SLA OUTER SHELL 6	FQ	4 1	S/S	+0	+600 DEG F XA540, 174DEG
A	A7866	T TEMP	SLA OUTER SHELL 7	FQ	4 1	S/S	+0	+600 DEG F XA838, 90DEG
A	A7867	T TEMP	SLA OUTER SHELL 8	FQ	4 1	S/S	+0	+600 DEG F XA608, 135DEG
A	A7868	T TEMP	SLA OUTER SHELL 9	FQ	4 1	S/S	+0	+600 DEG F XA830, 174DEG
A	A7869	T TEMP	SLA OUTER SHELL 10	FQ	4 1	S/S	+0	+600 DEG F XA785, 124DEG
A	A7870	T TEMP	SLA OUTER SHELL 11	FQ	4 1	S/S	+0	+600 DEG F XA792, 34DEG
A	A7871	T TEMP	SLA OUTER SHELL 12	FQ	4 1	S/S	+0	+600 DEG F XA785, 304DEG
A	A7872	T TEMP	SLA CUTTER SHELL 13	FQ	4 1	S/S	+0	+600 DEG F XA563, 174DEG
A	A7873	T TEMP	SLA CUTTER SHELL 14	FQ	4 1	S/S	+0	+600 DEG F XA563, 129DEG
A	A7874	T TEMP	SLA INNER SHELL 15	FQ	4 1	S/S	+0	+600 DEG F XA785, 214DEG
C	A7875	T TEMP	STEAM VENT TUBE	FQ	4 1	S/S	-100	+750 DEG F
C	A7876	T TEMP	STEAM VENT BNDLINE	FQ	4 1	S/S	-100	+750 DEG F
C	A7877	T TEMP	STEAM VENT	FQ	4 1	S/S	-100	+750 DEG F

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STRUCTURES

SPACECRAFT

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APJ110C - C M L S M - B L O C K I - M E A S U R E M E N T L I S T

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## MEAS. ID MEASUREMENT DESCRIPTION

		IM/TR	ACCESSIBILITY	MCPF RESPONSE	DISP GSE SYRU	DATA RANGE	LOCATION/REMARKS
						LOW	HIGH UNITS
A A8120	S SLA OUTER SHELL LONG STRAIN 1	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 34DEG
A A8121	S SLA OUTER SHELL CIRC STRAIN 1	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 34DEG
A A8122	S SLA INNER SHELL LONG STRAIN 1	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 34DEG
A A8123	S SLA INNER SHELL CIRC STRAIN 1	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 34DEG
A A8124	S SLA OUTER SHELL LONG STRAIN 2	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 124DEG
A A8125	S SLA OUTER SHELL CIRC STRAIN 2	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 124DEG
A A8126	S SLA INNER SHELL LONG STRAIN 2	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 124DEG
A A8127	S SLA INNER SHELL CIRC STRAIN 2	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 124DEG
A A8128	S SLA OUTER SHELL LCNG STRAIN 3	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 214DEG
A A8129	S SLA OUTER SHELL CIRC STRAIN 3	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 214DEG
A A8130	S SLA INNER SHELL LONG STRAIN 3	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 214DEG
A A8131	S SLA INNER SHELL CIRC STRAIN 3	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 214DEG
A A8132	S SLA OUTER SHELL LONG STRAIN 4	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 304DEG
A A8133	S SLA OUTER SHELL CIRC STRAIN 4	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 304DEG
A A8134	S SLA INNER SHELL LONG STRAIN 4	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 304DEG
A A8135	S SLA INNER SHELL CIRC STRAIN 4	FQ	4	1.0	S/S	-5000	+5000 UI/IN XA775, 304DEG
C A8520	T TEMP CM S-BAND ANT WINDOW LOC A	FQ	4	1	S/S	-100	+700 DEG F XC20.76, 135 DEG

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SUBSYSTEM	STRUCTURES	SPACECRAFT	17	MEASUREMENT ID	DESCRIPTION	TM/TR	ACCESSIBILITY	
						DISP GSE	MCPF RESPONSE	
						SYKO		
						LOW	HIGH	
						UNITS	UNITS	
							LOCATION/REMARKS	
C A8521 T TEMP CM S-BAND ANT WINDOW LOC A		FQ				4	1	S/S -100 +700 DEG F XC20.76,225 DEG
C A8522 T TEMP CM S-BAND ANT WINDOW LOC C		FQ				4	1	S/S -100 +700 DEG F XC20.76,135 DEG
C A8523 T TEMP CM S-BAND ANT WINDOW LOC D		FQ				4	1	S/S -100 +700 DEG F XC20.76,225 DEG



MEAS.	ID	MEASUREMENT	DESCRIPTION	IM/T/R	DISP GSE	MC/PF RESPONSE	DATA RANGE		LOCATION/REMARKS	
							LOW	HIGH		
C	F0120	P	PRESS H <sub>2</sub> O AND GLYCOL TANKS	FQ		4	1	S/S	+0	+50 PSIA
C	F0245	T	TEMP O <sub>2</sub> REG INLET	FQ		4	1	S/S	-50	+150 DEG F
C	F0327	P	PRESS WASTE H <sub>2</sub> O TANK DRAIN	FQ		4	1	S/S	+0	+50 PSIA
C	F0481	T	TEMP CP BRANCH 1 INLET	FQ		4	1	S/S	+40	+150 DEG F
C	F0482	T	TEMP CP BRANCH 1 OUTLET	FQ		4	1	S/S	+40	+150 DEG F
C	F0483	T	TEMP CP BRANCH 2 INLET	FQ		4	1	S/S	+40	+150 DEG F
C	F0484	T	TEMP CP BRANCH 2 OUTLET	FQ		4	1	S/S	+40	+150 DEG F
C	F0549	P	DIFF PRESS COLDPLATE BRANCH 1	FQ		4	1	S/S	+6	+2.0 PSID
C	F0550	P	DIFF PRESS COLDPLATE BRANCH 2	FQ		4	1	S/S	+0	+10 PSID



MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MC/PF RESPONSE	DATA RANGE		LOCATION/REMARKS
						DISP	GSE	
S	P2054	T TEMP GIMBAL ACTR CASE (YAW)	FQ		4	1	S/S	+0 +200 DEG F
S	P2055	T TEMP GIMBAL ACTR CASE (PITCH)	FQ		4	1	S/S	+0 +200 DEG F
S	P2071	T TEMP CHAMBER/NOZZLE FLANGE	FQ		4	1	S/S	-100 +600 DEG F
S	P2075	T TEMP OX HT EXCHANGER HELIUM IN	FQ		4	1	S/S	-100 +200 DEG F
S	P2076	T TEMP OX HT EXCHANGER HELIUM OUT	FQ		4	1	S/S	-100 +200 DEG F
S	P2077	T TEMP FUEL FT EXCHANGER HELIUM IN	FQ		4	1	S/S	-100 +200 DEG F
S	P2078	T TEMP FUEL FT EXCHANGER HELIUM OUT	FQ		4	1	S/S	-100 +200 DEG F



MEAS. ID	MEASUREMENT DESCRIPTION	IM/IR_	ACCESSIBILITY	MCPIF RESPONSE	DATA RANGE		LOCATION/REMARKS
					DISP	GSE	
C R0514 P CCW ROLL ENG PRESS SYS A	FQ			4	100	CPS	+0 +250 PSIA
C R0518 P -YAW ENG PRESS SYS A	FQ			4	100	CPS	+0 +250 PSIA
C R0520 P CCW ROLL ENG PRESS SYS B	FQ			4	100	CPS	+0 +250 PSIA
C R0525 P +YAW ENG PRESS SYS B	FQ			4	100	CPS	+0 +250 PSIA
C R0570 T TEMP SEAL + PITCH ENG SYS A	FQ			4	1	S/S	+0 +1000 DEG F
C R0571 T TEMP SEAL + PITCH ENG SYS B	FQ			4	1	S/S	+0 +1000 DEG F
C R2103 T TEMP -Y ENG INJECTOR SYS A	FQ			4	1	S/S	+0 +1000 DEG F
C R2114 T TEMP CCW ROLL INJECTOR SYS A	FQ			4	1	S/S	+0 +1000 DEG F
C R2115 T TEMP CCW ROLL INJECTOR SYS B	FQ			4	1	S/S	+0 +1000 DEG F
C R2116 T TEMP +Y ENG INJECTOR SYS B	FQ			4	1	S/S	+0 +1000 DEG F
C R4553 T -YAW ENG OUT WALL TEMP 1 SYS A	FQ			4	1	S/S	+0 +1000 DEG F
C R4554 T -YAW ENG OUT WALL TEMP 2 SYS A	FQ			4	1	S/S	+0 +1000 DEG F
C R4556 T +YAW ENG OUT WALL TEMP 1 SYS B	FQ			4	1	S/S	+0 +1000 DEG F
C R4557 T +YAW ENG OUT WALL TEMP 2 SYS B	FQ			4	1	S/S	+0 +1000 DEG F
C R4559 T CCW ROLL ENG OUT WALL T 1 SYS A	FQ			4	1	S/S	+0 +1000 DEG F
C R4560 T CCW ROLL ENG OUT WALL T 2 SYS A	FQ			4	1	S/S	+0 +1000 DEG F
C R4580 T CCW ROLL ENG OUT WALL T 1 SYS B	FQ			4	1	S/S	+0 +1000 DEG F



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APJ110C	A P C L L C	C M / S M	B L O C K	I	M E A S U R E M E N T	L I S T	
SUBSYSTEM	REACTION CONTROL	SPACERCRAFT	17				
MEAS. ID	MEASUREMENT DESCRIPTION	IM/TR	ACCESSIBILITY	MCPF	RESPONSE	DATA RANGE	LOCATION/REMARKS
		DISP GSE SYRO	LOW	HIGH	UNITS		
C R4581	T CCW ROLL ENG OUT WALL T 2 SYS B	FQ	4	1	S/S	+0 +1000	DEG F
S R7125	T TEMP INJ HEAD -P ENG SYS A	FQ	4	1	S/S	+0 +500	DEG F
S R7128	T TEMP INJ HEAD +Y ENG SYS B	FQ	4	1	S/S	+0 +500	DEG F
S R7137	T TEMP INJ HEAD CW ENG SYS C	FQ	4	1	S/S	+0 +500	DEG F
S R7140	T TEMP INJ HEAD CCW ENG SYS D	FQ	4	1	S/S	+0 +500	DEG F

SUBSYSTEM STRUCTURES		MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
					IM/IR DISP GSE SYRD	LUM	HIGH UNITS	
C	A1502	T TEMP SIDE HS	LOC A	PCM	2	1	S/S -260 +600	DEG F XC65, 71.50EG
C	A1505	T TEMP SIDE HS	LOC B	PCM	2	1	S/S -260 +600	DEG F XC65, 200DEG
C	A1509	T TEMP SIDE HS	LOC C	PCM	2	1	S/S -260 +600	DEG F XC65, 32.10EG
S	A2360	T TEMP SECT 3 IN SURF		PCM	2	1	S/S -100 +200	DEG F XS280, 560EG
S	A2361	T TEMP SECT 6 IN SURF		PCM	2	1	S/S -100 +200	DEG F XS280, 236DEG
S	A2364	T TEMP SECT 3 FUEL TANK SURF		PCM	2	1	S/S -100 +200	DEG F XS280, 660EG
S	A2365	T TEMP SECT 6 FUEL TANK SURF		PCM	2	1	S/S -100 +200	DEG F XS280, 2460EG
S	A2366	T TEMP SECT 4 IN SURF		PCM	2	1	S/S -100 +200	DEG F XS280, 145DEG
S	A2367	I TEMP SECT 1 IN SURF		PCM	2	1	S/S -100 +200	DEG F XS280, 325DEG

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PCM

MEASUREMENT LIST

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## SPACECRAFT 17

APJ110C

A P C L L O C M / S M H L O C K I

MEASUREMENT

ELECTRICAL POWER

PCM

## MEASUREMENT DESCRIPTION

## ACCESSIBILITY MC/PF RESPONSE

## TM/TR DISP GSE SYRO

## DATA RANGE

## LOW HIGH UNITS

## LOCATION/REMARKS

C C0175 T TEMP STATIC INVERTER 1 PCM+ 2 X 1 S/S +32 +248 DEG F

C C0176 T TEMP STATIC INVERTER 2 PCM+ 2 X 1 S/S +32 +248 DEG F

C C0177 T TEMP STATIC INVERTER 3 PCM+ 2 X 1 S/S +32 +248 DEG F

C C0178 T TEMP BATTERY A CASE PCM+ 2 X 1 S/S +32 +212 DEG F

C C0179 T TEMP BATTERY B CASE PCM+ 2 X 1 S/S +32 +212 DEG F

C C0188 P PRESS BATT COMPARTMENT (MANIF) PCM 2 10 S/S +0 +18 PSIA

C C0191 V DC VOLTAGE AUX BATTERY 1 PCM 2 10 S/S 0 +40 VDC

C C0192 V CC VOLTAGE AUX BATTERY 2 PCM 2 10 S/S 0 +40 VDC

C C0193 V DC VOLTAGE AUX BATTERY 3 PCM 2 10 S/S 0 +40 VDC

C C0200 V AC VOLTAGE MAIN BUS 1 PHASE A PCM+ SM A 1 X 10 S/S +0 +150 VAC

C C0201 V AC VOLTAGE MAIN BJS 1 PHASE B PCM SM A 1 X 10 S/S +0 +150 VAC

C C0202 V AC VOLTAGE MAIN BUS 1 PHASE C PCM SM A 1 X 10 S/S +0 +150 VAC

C C0203 V AC VOLTAGE MAIN BUS 2 PHASE A PCM+ SM A 1 X 10 S/S +0 +150 VAC

C C0204 V AC VOLTAGE MAIN BUS 2 PHASE B PCM SM A 1 X 10 S/S +0 +150 VAC

C C0205 V AC VOLTAGE MAIN BUS 2 PHASE C PCM SM A 1 X 10 S/S +0 +150 VAC

C C0206 V DC VOLTAGE MAIN BUS A PCM+ SM A 1 X 10 S/S +0 +45 VDC

C C0207 V DC VOLTAGE MAIN BUS B PCM+ SM A 1 X 10 S/S +0 +45 VDC



APJ110C - A P C L L O C M / S M / B L O C K _ I M E A S U R E M E N T L I S T		VL-01	SEPT 19, 1966	PAGE NO. 3		
SUBSYSTEM	MEASUREMENT ID	DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
ELECTRICAL POWER		SPACECRAFT 17	DISP GSE SYRO	LOW HIGH	UNITS	
MEAS.	ID	DESCRIPTION	TM/TR			
C	C0210 V	DC VOLTAGE BATTERY BJS A	PCM	SM	1 X 10	S/S +0 +45 VDC
C	C0211 V	DC VOLTAGE BATTERY BUS B	PCM	SM	1 X 10	S/S +0 +45 VDC
C	C0212 V	DC VOLTAGE POST LANDING BATTERY	PCM	SM	1 X 10	S/S +0 +45 VDC
C	C0213 F	FREQUENCY AC BUS 1 PHASE A	PCM	SM AP	1 X 1	S/S +380 +420 CPS
C	C0214 V	DC VOLTAGE BATT CHARGER OUT	PCM	SM	1 10	S/S +0 +45 VDC
C	C0215 C	DC CURRENT BATT CHARGER OUT	PCM+	SM	1 X 10	S/S +0 +5 AMP
C	C0217 F	FREQUENCY AC BUS 2 PHASE A	PCM	SM AP	1 X 1	S/S +380 +420 CPS
C	C0222 C	DC CURRENT BATTERY A	PCM	SM	1 X 10	S/S +0 +100 AMP
C	C0223 C	DC CURRENT BATTERY B	PCM	SM	1 X 10	S/S +0 +100 AMP
C	C0224 C	DC CURRENT POST LANDING BATTERY	PCM	SM	1 X 10	S/S +0 +100 AMP
C	C0227 V	DC VOLTAGE PYRO BATT A	PCM	SM	1 X 10	S/S +0 +40 VDC
C	C0228 V	DC VOLTAGE PYRO BATT B	PCM	SM	1 X 10	S/S +0 +40 VDC
C	C0232 V	DC VOLTAGE BATTERY RELAY FUS	PCM+	2 X 10	S/S +0 +45 VDC	
C	C0451 X	ESSENTIAL AC LOAD XFER	PCM	2 10	S/S	XFER EVENT
S	C2060 P	N2 PRESSURE F/C 1 REGULATED	PCM	STB	1 X 1	S/S +0 +75 PSIA
S	C2061 P	N2 PRESSURE F/C 2 REGULATED	PCM	STB	1 X 1	S/S +0 +75 PSIA
S	C2062 P	N2 PRESSURE F/C 3 REGULATED	PCM	STB	1 X 1	S/S +0 +75 PSIA



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APOLLO COMMAND BLOCK MEASUREMENT LIST

SUBSYSTEM ELECTRICAL POWER

SPACESHIFT

17

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PCM

MEAS. ID MEASUREMENT DESCRIPTION

ACCESSIBILITY MCPF RESPONSE

DISP GSE SYRO

DATA RANGE

LOW HIGH UNITS

LOCATION/REMARKS

S C2066 P O<sub>2</sub> PRESSURE F/C 1 REGULATED

PCM STB 1 X 10 S/S +0 +75 PSIA

S C2067 P O<sub>2</sub> PRESSURE F/C 2 REGULATED

PCM STB 1 X 10 S/S +0 +75 PSIA

S C2068 P O<sub>2</sub> PRESSURE F/C 3 REGULATED

PCM STB 1 X 10 S/S +0 +75 PSIA

S C2069 P H<sub>2</sub> PRESSURE F/C 1 REGULATED

PCM STB 1 X 10 S/S +0 +75 PSIA

S C2070 P H<sub>2</sub> PRESSURE F/C 2 REGULATED

PCM STB 1 X 10 S/S +0 +75 PSIA

S C2071 P H<sub>2</sub> PRESSURE F/C 3 REGULATED

PCM STB 1 X 10 S/S +0 +75 PSIA

S C2081 T TEMP F/C 1 COND EXHAUST

PCM+ SM 1 X 1 S/S +150 +250 DEG F

S C2082 T TEMP F/C 2 COND EXHAUST

PCM+ SM 1 X 1 S/S +150 +250 DEG F

S C2083 T TEMP F/C 3 COND EXHAUST

PCM+ SM 1 X 1 S/S +150 +250 DEG F

S C2084 T TEMP F/C 1 SKIN

PCM+ SM 1 1 S/S +80 +550 DEG F

S C2085 T TEMP F/C 2 SKIN

PCM+ SM 1 X 1 S/S +80 +550 DEG F

S C2086 T TEMP F/C 3 SKIN

PCM+ SM 1 X 1 S/S +80 +550 DEG F

S C2087 T TEMP F/C 1 RADIATOR OUTLET

PCM+ STB 1 X 1 S/S -50 +300 DEG F

S C2088 T TEMP F/C 2 RADIATOR OUTLET

PCM+ STB 1 X 1 S/S -50 +300 DEG F

S C2089 T TEMP F/C 3 RADIATOR OUTLET

PCM+ STB 1 X 1 S/S -50 +300 DEG F

S C2113 C DC CURRENT F/C 1 OUTPUT

PCM+ SM 1 10 S/S +0 +100 AMP

S C2114 C DC CURRENT F/C 2 OUTPUT

PCM+ SM 1 X 10 S/S +0 +100 AMP



APJ110C A P O L L O C M / S M B_L_O_C_K_I		M E A S U R E M E N T _ L I S T		VL-01	
SUBSYSTEM	MEAS.	MEASUREMENT DESCRIPTION	IM/TR	ACCESSIBILITY	MCPF RESPONSE
ELECTRICAL PCWFR	ID		DISP GSE SYRO	LOW	HIGH UNITS
	S C2115 C DC CURRENT F/C 3 OUTPUT	PCME	SM	P 1 X 10	S/S +0 +100 AMP
	S C2120 X FUEL CELL 1 BUS A DISCONNECT	PCME	TB	1 10	S/S OFF ON EVENT
	S C2121 X FUEL CELL 2 BUS A DISCONNECT	PCME	TB	1 10	S/S OFF ON EVENT
	S C2122 X FUEL CELL 3 BUS A DISCONNECT	PCME	TB	1 10	S/S OFF ON EVENT
	S C2125 X FUEL CELL 1 BUS B DISCONNECT	PCME	TB	1 10	S/S OFF ON EVENT
	S C2126 X FUEL CELL 2 BUS B DISCONNECT	PCME	TB	1 10	S/S OFF ON EVENT
	S C2127 X FUEL CELL 3 BUS B DISCONNECT	PCME	TB	1 10	S/S OFF ON EVENT
	S C2139 R FLOW RATE H2 F/C 1	PCM	SM	1 X 10	S/S +0 +0.2 LB/HR
	S C2140 R FLOW RATE H2 F/C 2	PCM	SM	1 X 10	S/S +0 +0.2 LB/HR
	S C2141 R FLOW RATE H2 F/C 3	PCM	SM	1 X 10	S/S +0 +0.2 LB/HR
	S C2142 R FLOW RATE C2 F/C 1	PCM	SM	1 X 10	S/S +0 +1.6 LB/HR
	S C2143 R FLOW RATE O2 F/C 2	PCM	SM	1 X 10	S/S +0 +1.6 LB/HR
	S C2144 R FLOW RATE O2 F/C 3	PCM	SM	1 X 10	S/S +0 +1.6 LB/HR
	S C2160 X PH FACTOR WATER CONDITION F/C 1	PCM	SIB	1 X 1	S/S NOR HIGH EVENT
	S C2161 X PH FACTOR WATER CONDITION F/C 2	PCM	SIB	1 X 1	S/S NOR HIGH EVENT
	S C2162 X PH FACTOR WATER CONDITION F/C 3	PCM	STB	1 X 1	S/S NOR HIGH EVENT
	S C2323 X FUEL CELL 1 SHUT OFF MCN	PCME	TB	1 10	S/S CLOSE OPEN EVENT



APJ110C		A P C L L C   C M / S M		B L O C K   I		M E A S U R E M E N T   L I S T		VL-01		
S U B S Y S T E M	E L E C T R I C A L	P O W E R	S P A C E C R A F T	17						
MEAS. ID		M E A S U R E M E N T   D E S C R I P T I O N		T M / T R		A C C E S S I B I L I T Y		M C P F   R E S P O N S E		D A T A   R A N G E
				D I S P		G S F		S Y R O		L O W   H I G H   U N I T S
S C2324 X FUEL CELL 2 SHUT OFF MN		PCME		TB		1		10		S / S   C L O S E   O P E N   E V E N T
S C2325 X FUEL CELL 3 SHUT OFF MN		PCME		TB		1		10		S / S   C L O S E   O P E N   E V E N T

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PCM



APJ110C A P O L L O C M / S M B L O C K I M E A S U R E M E N T L I S T			VL-01		
SUBSYSTEM	MASTER EVENT SEQUENCE CCNTROLLER	SPACECRAFT	PCW		
MEAS. ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
		TM/TR DISP GSE SYRO		LOW HIGH UNITS	
C D0002 X LES ABORT INITIATE SIGNAL A	PCME	2	10	S/S	ABORT EVENT
C D0005 V DC VOLTAGE PYRO BUS A	PCM	2	10	S/S	0 +40. VDC
C D0006 V DC VOLTAGE PYRO BUS B	PCM	2	10	S/S	0 +40. VDC
C DCC23 X CM-SM SEP RELAY CLOSE A	PCME	2	10	S/S	SEP EVENT
C D0024 X CM-SM SEP RELAY CLOSE B	PCME	2	10	S/S	SEP EVENT
C D0037 X ELS SEQ START RLY CLOSE A	PCME	2	10	S/S	START EVENT
C D0038 X ELS SEQ START RLY CLOSE B	PCME	2	10	S/S	START EVENT
C D0044 X BOOSTER CUT-OFF SIG A	PCME	2	10	S/S	CUT EVENT
C D0045 X BOOSTER CUT-OFF SIG B	PCME	2	10	S/S	CUT EVENT
C D0062 X LES ABORT INITIATE SIGNAL B	PCME	2	10	S/S	ABORT EVENT
C D0105 X TWR JETTISON A	PCME	2	10	S/S	JETT. EVENT
C D0106 X TWR JETTISON B	PCME	2	10	S/S	JETT. EVENT
C D0120 X CANARD DEPLOY A	PCME	2	10	S/S	DEPLOY EVENT
C D0121 X CANARD DEPLOY B	PCME	2	10	S/S	DEPLOY EVENT
C D0125 X ADAPT/SM SEP INITIATE A	PCME	2	10	S/S	INIT. EVENT
C D0126 X ADAPT/SM SEP INITIATE B	PCME	2	10	S/S	INIT. EVENT
C D0127 X ADAPT SEPARATION A	PCME	2	10	S/S	SEP EVENT



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PCM

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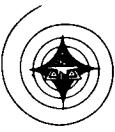
APJLOC A P C L L G C M / S M B L O C K \_ I M E A S U R E M E N T \_ L I S T  
 SUBSYSTEM<sup>1</sup> MASTER EVENT SEQUENCE CONTROLLER

SPACERCRAFT 17

MEAS. ID	MEASUREMENT DESCRIPTION	TIME/IR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
					DISP	GSE SYRO	
C D0128 X	ADAPT SEPARATION B	PCME	2	10	S/S		SEP EVENT
C D0130 X	HAND CONTROLLER INPUT A	PCME	2	10	S/S		ABORT EVENT
C D0131 X	HAND CONTROLLER INPUT B	PCME	2	10	S/S		ABORT EVENT
C D0132 X	FDS ABORT LOGIC IN NC 1	PCME	2	10	S/S	VOTE	EVENT
C D0133 X	FDS ABORT LOGIC IN NO 2	PCME	2	10	S/S	VOTE	EVENT
C D0134 X	EDS ABORT LOGIC IN NO 3	PCME	2	10	S/S	VOTE	EVENT
C D0135 X	EDS ABORT LOGIC OUT A	PCMF	AP	2	10/100S/S		ABORT EVENT
C D0136 X	FDS ABORT LOGIC OUT B	PCME	AP	2	10/100S/S		ABORT EVENT
C D0140 X	DIRECT ULLACE CV A	PCME	2	10	S/S		IN EVENT
C D0141 X	DIRECT ULLAGE JV B	PCME	2	10	S/S		ON EVENT
C D0170 X	RCS ACTIVATE SIG A	PCME	"	2	10	S/S	ACT EVENT
C D0171 X	RCS ACTIVATE SIG B	PCME	"	2	10	S/S	ACT EVENT
C D0173 X	CM RCS PRESS SIG A	PCME	"	2	10	S/S	PRESS EVENT
C D0174 X	CM RCS PRESS SIG B	PCME	"	2	10	S/S	PRESS EVENT
C D0200 V	DC VOLTAGE LOGIC BUS A	PCM	"	2	10	+0	+37 VDC
C D0201 V	DC VOLTAGE LOGIC BUS B	PCM	"	2	10	+0	+37 VDC
C D0230 X	FWD HS JETTISON A	PCM	"	2	10	S/S	JETT EVENT



APPLIC.	APPLICATION	BLOCK	MEASUREMENT	LIST	VL-01	PCM	
SUBSYSTEM	MASTER EVENT SEQUENCE CONTROLLER	SPACECRAFT	17				
MEAS.	ID	MEASUREMENT DESCRIPTION					
C 00231 X END HS JETTISON B		PCME		2	10	\$/\$	JFTT EVENT
C 00315 X EDS ENABLE A		PCME		2	10	\$/\$	ENABLE EVENT
C 00316 X EDS ENABLE B		PCME		2	10	\$/\$	ENABLE EVENT
C 01605 X LES MOTOR INITIATE A		PCME		2	10	\$/\$	FIRE EVENT
C 01607 X LES MOTOR INITIATE B		PCME		2	10	\$/\$	FIRE EVENT



MEAS. ID	MEASUREMENT DESCRIPTION	TH/MR	ACCESSIBILITY DISP GSE SYM(1)	MCPR & SPONSOR	DATA RANGE		LOCATION/REMARKS
					LOW	HIGH	
C E0001 X	CRUZER DEPLOY RELAY CLOSE A	PCM/F	?	10	S/S		DEPLOY EVENT
C E0002 X	DRGUE DEPLOY RELAY CLOSE B	PCM/E	?	10	S/S		DEPLOY EVENT
C E0003 X	MAIN CHUTE DEPL-ORG REL RLY A	PCM/E	2	10	S/S		DEPLOY EVENT
C E0004 X	MAIN CHUTE DEPL-ORG REL RLY B	PCM/E	2	10	S/S		DEPLOY EVENT
C E0007 X	HARD SW LICK-IN RELY CLOSE A	PCM/E	2	10	S/S		CLOSE EVENT
C E0008 X	FARO SW LICK-IN RELY CLOSE B	PCM/E	2	10	S/S		CLOSE EVENT
C E0035 P	HARMETRIC DTS/SS STATIC REF	PCM	2	1	S/S	+0 +15	PSIA
C E0321 X	MAIN CHUTE DISCONNECT RELAY A	PCM/F	2	10	S/S		DISC EVENT
C F0322 X	MAIN CHUTE DISCONNECT RELAY B	PCM/F	2	10	S/S		DISC EVENT



APJ110C	A P O C L L 0 . C M _ / S M	B L _ 0 C K I	M E A S U R E M E N T	L I S T	VL-01
SUBSYSTEM					
ENVIRONMENTAL CONTROL					
MEAS.	ID	MEASUREMENT	DESCRIPTION		
				TM/TR ACCESSIBILITY	DATA RANGE
				DISP GSE MC/PF SYRQ	LOW HIGH UNITS
C	F0001	P PRESSURE CABIN	PCM+	2 X 1	S/S +0 +17 PSIA
C	F0002	T TEMP CABIN	PCM+	2 X 1	S/S +0 +125 DEG F
C	F0006	P PRESS SURGE TANK	PCM	2 X 1	S/S +50 +1050 PSIA
C	F0009	Q QUANTITY WASTIF WATER TANK	PCM+	2 X 1	S/S +0 +100 PCNT
C	F0010	Q QUAN PUTABLE H2O TANK	PCM+	2 X 1	S/S +0 +100 PCNT
C	F0015	P PRESS GLYCOL PUMP OUTLET	PCM+	2 X 1	S/S +0 +60 PSIA
C	F0017	T TEMP GLYCOL EVAP OUTLET STEAM	PCM	2 X 1	S/S +20 +95 DEG F
C	F0018	T TEMP GLYCOL EVAP OUTLET LIQUID	PCM+	2 X 1	S/S +25 +75 DEG F
C	F0019	Q QUANTITY GLYCEROL ACCUM	PCM+	2 X 1	S/S +0 +100 PCNT
S	F0030	Q QUANTITY H2 TANK 1	PCM+	2 X 1	S/S +0 +28 LB
S	F0031	C QUANTITY H2 TANK 2	PCM+	2 X 1	S/S +0 +28 LB
S	F0032	Q QUANTITY O2 TANK 1	PCM+	2 X 1	S/S +0 +320 LB
S	F0033	Q QUANTITY O2 TANK 2	PCM+	2 X 1	S/S +0 +320 LB
C	F0034	P BACK PRESS GLYCEROL EVAPORATOR	PCM+	1 X 1	S/S +0.05 +0.25 PSIA
C	F0035	R FLOWRATE ECS 32	PCM+	2 X 1	S/S +0.7 +1.0 LB/HR
C	F0036	P PRESS OUTLET 32 SEC SUPPLY	PCM	2 X 1	S/S +0 +150 PSIA
S	F0037	P PRESS UPS TANK 1	PCM+	2 X 1	S/S +50 +1050 PSIA



APJ110C	A P U L L O	C M / S M	B L O C K I	M E A S U R E M E N T L I S T	VL-01
SUBSYSTEM	ENVIRONMENTAL CONTROL		SPACECRAFT	17	
MEAS.	TD	MEASUREMENT DESCRIPTION			PAGE NO. 12
S F0043 P PRESS H2 TANK 2			ACCFSSIBILITY	MCPF RESPONSE	DATA RANGE
S FCC39 P PRESS H2 TANK 1			TM/TR	GSE SYRG	LOW HIGH UNITS
S F0C40 P PRESS H2 TANK 2			PCM*		+50 +1050 PSIA
S FCC41 T TEMP H2 TANK 1			PCM*		2 x 1 S/S +0 +350 PSIA
S F0C42 T TEMP H2 TANK 2			PCM*		2 x 1 S/S +0 +350 PSIA
S F0043 T TEMP H2 TANK 1			PCM*		2 x 1 S/S +0 +350 PSIA
S F0044 T TEMP H2 TANK 2			PCM*		2 x 1 S/S -325 +80 DEG F

APJ110C		A P U L L C C H A S M		B L O C K I		M E A S U R E M E N T L I S T		V L - 0 1	
S U B S Y S T E M		G U I D A N C E A N D N A V I G A T I O N		S P A C E C R A F T		1 7		S E P T 1 3 , 1 9 6 6	
M E A S .	I U	M E A S U R E M E N T	D E S C R I P T I O N	T M / T R	A C C E S S I B I L I T Y	M C P F R E S P O N S E	D A T A R A N G E	L O C A T I O N / R E M A R K S	
C	G0001	V COMPUTER DIGITAL DATA 40 BITS	PCM	2 x 50	S/S				
C	G1101	V -28 VDC SUPPLY	PCM+	2 x 1	S/S	0	-35 VDC		
C	G1110	V. 2.5 VDC TM BIAS	PCM+	2	1	S/S	0	+5 VDC	
C	G1503	X IMU +28 VDC OPERATE	PCM	2 x 10	S/S			OPRT EVENT PSA TRAY 10	
C	G1513	X IMU +28 VDC STANDBY	PCM	2 x 10	S/S			STBY EVENT PSA TRAY 10	
C	G1523	X AGC +28 VDC	PCM	2	10	S/S		ON EVENT PSA TRAY 10	
C	G1533	X OPTX +28 VDC	PCM	2	10	S/S		ON EVENT PSA TRAY 10	
C	G2110	V IGA TORQUE MOTOR INPUT	PCM	2	10	S/S	-8.0	+8.0 VDC	
C	G2112	H IGA_1X RES OUTPUT SINE IN PHASE	PCM	2	10	S/S	-0	-360 DEG	
C	G2113	H IGA_1X RFS OUTPUT COS IN PHASE	PCM	2	10	S/S	0	360 DEG	
C	G2117	V IGA SERVO ERROR IN PHASE	PCM	2	100	S/S	-1.0	+1.0 VRMS	
C	G2140	V MGA_TORQUE_MOTOR INPUT	PCM	2	10	S/S	-8.0	+8.0 VDC	
C	G2142	H MGA_1X RES OUTPUT SINE IN PHASE	PCM	2	10	S/S	0	360 DEG	
C	G2143	H MGA_1X RES OUTPUT COS IN PHASE	PCM	A	2	10	S/S	0	
C	G2147	V MGA SERVO_ERROR IN PHASE	PCM		2	100	-1.0	+1.0 VRMS	
C	G2170	V OGA_TORQUE_MOTOR INPUT	PCM		2	10	-8.0	+8.0 VDC	
C	G2172	H OGA_1X RES OUTPUT SINE IN PHASE	PCM		2	10	0	360 DEG	



APJ100C A D C L L C C u / S H o L O C K I		M E A S U R E M E N T L I S T		VLT-01	
MEAS.	SPACESCAFF	ACCESSIBILITY	DISP GST SYST	LUM	HIGH UNITS
C G2173 V DSA IN RFS INPUT IN PHASE	PCM	TM/FP	2 X 10	S/S	0 360 DEG PSA TRAY 1
C G2177 V DSA SEVEN INPUT IN PHASE	PCM	TM/FP	2 X 10	S/S	-1.0 +1.0 VARS
C G2206 V 15a CDU 1X RFS ERROR IN PHASE	PCM	DISP GST SYST	2 10	S/S	-7.0 +7.0 VARS PSA TRAY 1
C G2206 V 25a CDU 1X RFS ERROR IN PHASE	PCM	DISP GST SYST	2 10	S/S	-7.0 +7.0 VARS PSA TRAY 1
C G2206 V 35a CDU 1X RFS ERROR IN PHASE	PCM	DISP GST SYST	2 10	S/S	-7.0 +7.0 VARS PSA TRAY 1
C G2300 T PIPA TEMP	PCM+	DISP GST SYST	2 X 1	S/S	-125 -135 DEG F
C G2301 T TRIG TEMP	PCM+	DISP GST SYST	2 X 1	S/S	128.5 138.5 DEG F
C G2302 C TMR HEATER CURRENT	PCM+	DISP GST SYST	2 X 1	S/S	0 2 AMP PSA TRAY 7
C G2303 C TMR BLOWER CURRENT	PCM+	DISP GST SYST	2 X 1	S/S	0 1000 MADC PSA TRAY 7
C G3104 V SXT TRUN MDA INPUT IN PHASE	PCM	DISP GST SYST	2 10	S/S	
C G3105 V SXT TRUN TACH OUTPUT	PCM	DISP GST SYST	2 10	S/S	
C G3114 V SXT SHAFT MDA INPUT IN PHASE	PCM	DISP GST SYST	2 10	S/S	
C G3115 V SXT SHAFT TACH OUTPUT	PCM	DISP GST SYST	2 10	S/S	
C G3141 V TRUN COU 16X RFS ERROR IN PHASE	PCM	DISP GST SYST	2 10	S/S	
C G3211 V SXT SHAFT 16X RFS ERROR IN PHASE	PCM	DISP GST SYST	2 10	S/S	
C G4300 T ACC TEMP MATOR	PCM	DISP GST SYST	2 1	S/S	+20 +119 DEG F
C G5000 X PIPA FAIL	PCM	DISP GST SYST	1 X 10	FAIL	EVENT

S P A C E a n d I N F O R M A T I O N S Y S T E M S

D I V I S I O N

P A G E N O . 14

S E P T 19, 1960

P C M



MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPC RESPONSE	DATA RANGE		LOCATION/REMARKS				
						DISP	GSE	SYRO	LOW	HIGH	UNITS	
C	G5001	X IMU FAIL	PCME	X	1 X 1)	S/S	FAIL	EVENT				
C	G5002	X CDU FAIL	PCME	X	1 X 1)	S/S	FAIL	EVENT				
C	G5003	X GIMBAL LOCK WARNING	PCME	X	1 X 1)	S/S	FAIL	EVENT				
C	G5005	X ERROR DETECT	PCME	X	1 1 0	S/S	ERROR	EVENT				
C	G5006	X IMU TEMP LIGHT	PCME	X	1 1 0	S/S	OUT BD	EVENT				
C	G5C07	X ZERO ENCODED LIGHT	PCME	X	1 1 0	S/S	ZROING	EVENT				
C	G5C08	X IMU DELAY LIGHT	PCME	X	1 1 0	S/S	DELAY	EVENT				
C	G5020	X AGC ALARM 1 (PROGRAM)	PCME	X	1 1 0	S/S	PROG	EVENT				
C	G5021	X AGC ALARM 2 (AGC ACTIVITY)	PCME	X	1 1 0	S/S	ACTVITY	EVENT				
C	G5022	X AGC ALARM 3 (TM)	PCME	X	1 1 0	S/S						
C	G5023	X AGC ALARM 4 (PTTG CK FAIL)	PCME	X	1 1 0	S/S	FAIL	EVENT				
C	G5C24	X AGC ALARM 5 (SCALAR FAIL)	PCME	X	1 1 0	S/S	FAIL	EVENT				
C	G5025	X AGC ALAR 6 (PARITY FAIL)	PCME	X	1 1 0	S/S	FAIL	EVENT				
C	G5C26	X AGC ALAR 7 (COUNTER FAIL)	PCME	X	1 1 0	S/S	FAIL	EVENT				
C	G5027	X AGC ALAR 8 (KEY RELEASE)	PCME	X	1 1 0	S/S	RELEASE	EVENT				
C	G5C28	X AGC ALARM 9 (EJECT LOCK)	PCME	X	1 1 0	S/S	LOCK	EVENT				
C	G5C29	X AGC ALARM 10 (TC TRAP)	PCME	X	1 1 0	S/S	TRAP	EVENT				



APJ110C APPENDIX C MEASUREMENT LIST VI-01

SUBSYSTEM GUIDANCE AND NAVIGATION SPACECRAFT 17 PCM

MEAS. ID MEASUREMENT DESCRIPTION TM/TR DISP GSE SYRO ACCESSIBILITY MCPF RESPONSE DATA RANGE LOCATION/REMARKS

C 65030 X	COMPUTER POWER FAIL LIGHT	PCM	X		1 X 10	S/S	FAIL		EVENT		
C 66000 P	IMU PRESSURE	PCM	A	2	1	S/S	0	25 PSIA			
C 66020 T	PSA TEMP 1 TRAY 3	PCM		2	1	S/S	+20	+119 DEG F			
C 66021 T	PSA TEMP 2 TRAY 2	PCM		2	1	S/S	+20	+119 DEG F			
C 66022 T	PSA TEMP 3 TRAY 4	PCM		2	1	S/S	+20	+119 DEG F			

MEASUREMENT LIST							VL-01
MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY		DATA RANGE		LOCATION/REMARKS
			TM/TR	DSP GSE SYRO	LOW	HIGH	
C	H0024 R	PITCH RATE	PCM		2	50	S/S -25 +25 DEG/S
C	H0034 H	PITCH POS FEEDBACK IN	PCM		2	50	S/S -9.50 +9.50 DEG
C	H0047 C	PTV DIFF CLUTCH CURRENT COMB	PCM		2	50	S/S +850 -850 MADC
C	H0050 R	PITCH RATE ERROR AMP OUT	PCM	A	2	50	S/S -6.25 +6.25 DEG/S
C	H0067 V	P INTEGRATOR/ATT ERROR SUMMING	PCM+	A	2	10	S/S -2.5 +2.5 VDC
C	H0075 H	PITCH SCS ATT ERROR	PCM+		2 X 10	S/S -20 +20 DEG	
C	H0087 X +	PITCH/+X SOLENOID DRIVER OUT	PCME		2	200	S/S FIREENABLE EVENT
C	H0C88 X -	PITCH/-X SOLENOID DRIVER OUT	PCME		2	200	S/S FIREENABLE EVENT
C	HCC89 X +	PITCH/-X SOLENOID DRIVER OUT	PCME		2	200	S/S FIREENABLE EVENT
C	HCC90 X -	PITCH/-X SOLENOID DRIVER OUT	PCME		2	200	S/S FIREENABLE EVENT
C	H0100 X	G-N DV MODE CONTROL	PCME	" X	1 X 10	S/S	GN DV EVENT
C	H0101 X	G-N ATT MODE CONTROL	PCME	X	1 X 10	S/S	GN ATT EVENT
C	H0102 X	G-N ENTRY MODE CONTROL	PCME	X	1 X 10	S/S	GN ENT EVENT
C	H0103 X	MONITOR MODE CONTROL	PCMF	X	1 X 10	S/S	MON EVENT
C	H1024 R	YAW RATE	PCM		2	50	S/S -25 +25 DEG/S
C	H1034 H	YAW POS FEEDBACK IN	PCM		2	50	S/S -5.5 +13.5 DEG
C	H1047 C	YTV DIFF CLUTCH CURRENT COMB	PCM		2	50	S/S +850 -850 MADC



MEAS. ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPIF RESPONSE	DATA RANGE		LOCATION/REMARKS
				TM/TR	DISP GSE SYRO	
C H1050 R YAW RATE ERROR AMP OUT	PCM	A	2 50	S/S	-6.25 +6.25	DEG/S
C H1067 V Y INTEGRATOR/ATT ERROR SUMMING	PCM+	A	2 10	S/S	-2.5 +2.5	VDC
C H1075 H YAW SCS ATT ERROR	PCM+		2 X 10	S/S	-20 +20	DEG
C H1087 X +YAW/+X SOLENOID DRIVER OUT	PCME		2 200	S/S	FIREENABLE EVENT	
C H1088 X -YAW/+X SOLENOID DRIVER OUT	PCME		2 200	S/S	FIREENABLE EVENT	
C H1089 X +YAW/-X SOLENOID DRIVER OUT	PCME		2 -200	S/S	FIREENABLE EVENT	
C H1C90 X -YAW/-X SOLENOID DRIVER OUT	PCME		2 200	S/S	FIREENABLE EVENT	
C H1100 X SCS DV MODE CONTROL	PCME	X	1 10	S/S	SCS DV EVENT	
C H1101 X SCS ATT MODE CONTROL	PCME	X	1 X 10	S/S	SCS ATT EVENT	
C H1102 X SCS ENTRY MODE CONTROL	PCME	X	1 X 10	S/S	SCS ENT EVENT	
C H1103 X SCS LOCAL VERTICAL MODE CONTROL	PCME	X	1 X 10	S/S	SCS LV EVENT	
C H2015 Y COMBINED AG SMRD LOGIC OUT	PCM	A	2 10	S/S	0 +5	VDC
C H2024 R ROLL RATE	PCM		2 50	S/S	-25 +25	DEG/S
C H2026 V COMBINED RG SMRD LOGIC OUT	PCM	A	2 10	S/S	0 +5	VDC
C H2030 Y COMBINED AG TEMP LOGIC OUT	PCM		2 -1	S/S	0 +5	VDC
C H2050 R ROLL RATE ERROR AMP OUT	PCM	A	2 50	S/S	-6.25 +6.25	DEG/S
C H2070 H ROLL ATTITUDE ERROR AMP OUT	PCM	A	2 10	S/S	-12.5 +12.5	DEG



APJ110C - A P O I L O - C M / S M - B L O C K I - M E A S U R E M E N T L I S T							VL-01
SUBSYSTEM STABILIZATION AND CONTROL		MEAS. ID	MEASUREMENT DESCRIPTION	IM/IR DISP	MCPF RESPONSE GSE SYRO	DATA RANGE LOW HIGH UNITS	LOCATION/REMARKS
C H2075	H RCLL SCS ATT	ERROR	PCM+	2 X 10	S/S	-20 +20	DEG.
C H2087	X + ROLL/+Z	SOLENOID DRIVER OUT	PCM	2	200	S/S	FIREENABLE EVENT
C H2088	X - ROLL/-Z	SOLENOID DRIVER OUT	PCM	2	200	S/S	FIREENABLE EVENT
C H2089	X + ROLL/-Z	SOLENOID DRIVER OUT	PCM	2	200	S/S	FIREENABLE EVENT
C H2C90	X - ROLL/-Z	SOLENOID DRIVER OUT	PCM	2	200	S/S	FIREENABLE EVENT
C H2091	X + ROLL/+Y	SOLENOID DRIVER OUT	PCM	2	200	S/S	FIREENABLE EVENT
C H2C92	X - ROLL/-Y	SOLENOID DRIVER OUT	PCM	2	200	S/S	FIREENABLE EVENT
C H2C93	X + ROLL/-Y	SOLENOID DRIVER OUT	PCM	2	200	S/S	FIREENABLE EVENT
C H2C94	X - ROLL/-Y	SOLENOID DRIVER OUT	PCM	2	200	S/S	FIREENABLE EVENT
C H3185	X •05G	MANUAL SWITCH	PCM	2	10	S/S	+5 VDC
C H4100	H RESOLVER	SIN OUT PITCH ATT	PCM+	2 X 10	S/S	-12.0 +12.0	VRMS
C H4101	H RESOLVER	COS OUT PITCH ATT	PCM+	2 X 10	S/S	-12.0 +12.0	VRMS
C H4102	H RESOLVER	SIN OUT YAW ATT	PCM+	2 X 10	S/S	-12.0 +12.0	VRMS
C H4103	H RESOLVER	COS OUT YAW ATT	PCM+	2 X 10	S/S	-12.0 +12.0	VRMS
C H4104	H RESOLVER	SIN OUT ROLL ATT	PCM+	2 X 10	S/S	-12.0 +12.0	VRMS
C H4105	H RESOLVER	COS OUT ROLL ATT	PCM+	2 X 10	S/S	-12.0 +12.0	VRMS
C H4320	X SPS	SOLENOID DRIVER OUT 1	PCM	2 50	S/S	FIREENABLE EVENT	



APJ11CC		A P C L T C		C M A / S M		B L O C K I		M F A S U R E M E N T L I S T		VL-01	
SUBSYSTEM		SPACRAFT		17						PCM	
STABILIZATION AND CONTROL											
MEAS.	ID	MEASUREMENT DESCRIPTION		ACCESSIBILITY		MCPF RESPONSE		DATA RANGE		LOCATION/REMARKS	
C H4321	X SPS	SCIENCE/GND DRIVER OUT 2		TM/TR		DISP GSE SYRC		LOW HIGH UNITS			
				PCMF		2 50		S/S		FIREENABLE EVENT	



APJ110C A P O L L O C M / S M B L O C K I M E A S U R E M E N T L I S T VL-01

SUBSYSTEM FLIGHT TECHNOLOGY  
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MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY		MCPP RESPONSE		DATA RANGE		LOCATION/REMARKS
			FM/TR	DISP	GSE	SYRO	LOW	HIGH	
C	K1051	RADIATION DOSIMETER 1	PCM		2	10	S/S	+0 +100 RAD/H	
C	K1052	RADIATION DOSIMETER 2	PCM		2	10	S/S	+0 +100 RAD/H	
C	K1053	T TEMPERATURE DOSIMETER	PCM		2	1	S/S	+0 +140 DEG F	



MEAS.	SUBSYSTEM SERVICE PROPULSION	DESCRIPTION	MEASUR. ELEMENT				LOCATION/REMARKS
			TM/TR	DISP GSE	MCPF SYRU	DATA RANGE LOW HIGH UNITS	
S P0001	P HE PRESS TANK	PCM+			2 X 10	S/S	+0 +5K PSIA
S P0002	T HE TEMP TANK	PCM			2 1	S/S	-100 +200 DEG F
S P0003	P PRESS OXIDIZER TANKS	PCM+			1 10	S/S	+0 +300 PSIA
S P0006	P PRESS FUEL TANKS	PCM+			1 10	S/S	+0 +300 PSIA
S P0009	P PRESS MAIN VLV ENG OXIDIZER IN	PCM			2 X 10	S/S	+0 +300 PSIA
S P0010	P PRESS MAIN VLV ENG FUEL IN	PCM			2 X 10	S/S	+0 +300 PSIA
S P0020	T TEMP CHAMBER OUTER SKIN 1	PCM			2 X 1	S/S	+0 +300 PSIA
S P0022	H POSITION FUEL/OXIDIZER VLV 1	PCM			2 X 10	S/S	+0 +90 DEG
S P0023	H POSITION FUEL/OXIDIZER VLV 2	PCM			2 X 10	S/S	+0 +90 DEG
S P0024	H POSITION FUEL/OXIDIZER VLV 3	PCM			2 X 10	S/S	+0 +90 DEG
S P0025	H POSITION FUEL/OXIDIZER VLV 4	PCM			2 X 10	S/S	+0 +90 DEG
S P0050	T TEMP NOZZLE CUTTER SKIN 1	PCM			2 1	S/S	-250 +2500 DEG F
S P0600	P ENG VLV ACT SYS TANK PRESS PRI	PCM			2 1	S/S	+0 +5000 PSIA
S P0601	P ENG VLV ACT SYS TANK PRESS SEC	PCM			2 1	S/S	+0 +5000 PSIA
S P0655	Q QUAN OX TANK 1 PRI - TOTAL AUX	PCM			2 X 1	S/S	+0 +16K LB
S P0656	Q QUAN CX TANK 2	PCM			2 X 1	S/S	+0 +16K LB
S P0657	Q QUAN FUEL TANK 1 PRI - TOTAL AUX	PCM	T	2 X 1	S/S	+0 +8K LB	

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PCM

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A P C L \_ L \_ C \_ C M \_ L S M \_ B L \_ Q C K \_ L \_ M E A S U R E M E N T \_ L I S T

SUBSYSTEM  
SERVICE PROPULSION

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PCM

MEAS. ID MEASUREMENT DESCRIPTION

IM/TR DLSP GSE SYRO

ACCESSIBILITY MCPF RESPONSE

LOW HIGH UNITS

DATA RANGE

LOW HIGH UNITS

LOCATION/REMARKS

PCM

PCM

PCM

PCM

S P0658 Q QUAN FUEL TANK 2

S P0661 P PRESS ENGINE CHAMBER

S P0661 P PRESS ENGINE CHAMBER

S P0661 P PRESS ENGINE CHAMBER

S P0658 Q QUAN FUEL TANK 2

S P0661 P PRESS ENGINE CHAMBER

S P0661 P PRESS ENGINE CHAMBER

S P0661 P PRESS ENGINE CHAMBER



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APOLLO C M/L S/M B L U C K I MEASUREMENT LIST  
SUBSYSTEM REACTION CONTROL

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PCM

MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	DISP GSE SYRO	ACCESSIBILITY MCPC RESPONSE		DATA RANGE UNITS		LOCATION/REMARKS
					LOW	HIGH	LOW	HIGH	
C R0001	P HE PRESS TANK A	PCM+	SM	1 X 1	S/S	+0	+5K	PSIA	
C R0002	P HE PRESS TANK B	PCM+	SM	1 X 1	S/S	+0	+5K	PSIA	
C R0003	T HE TEMP TANK A	PCM	SM	1	S/S	+0	+300	DEG F	
C R0004	T HE TEMP TANK B	PCM	SM	1	S/S	+0	+300	DEG F	
C R0005	P PRESS FUEL TANK A	PCM+	SM	1 X 10	S/S	+0	+400	PSIA	
C R0006	P PRESS FUEL TANK B	PCM+	SM	1 X 10	S/S	+0	+400	PSIA	
C RC011	P PRESS OXIDIZER TANK A	PCM+	SM	1 X 10	S/S	+0	+400	PSIA	
C R0012	P PRESS OXIDIZER TANK B	PCM+	SM	1 X 10	S/S	+0	+400	PSIA	
C R2201	T TEMP OX VALVE CW ENG SYS A	PCM		2	S/S	-50	+250	DEG F	
C R2202	T TEMP OX VALVE -Y FNG SYS A	PCM		2	1	S/S	-50	+250	DEG F
C R2203	T TEMP OX VALVE +Y ENG SYS B	PCM		2	1	S/S	-50	+250	DEG F
C R2204	T TEMP OX VALVE -P ENG SYS B	PCM		2	1	S/S	-50	+250	DEG F
C R2205	T TEMP OX VALVE -P ENG SYS A	PCM		2	1	S/S	-50	+250	DEG F
C R2206	T TEMP OX VALVE CW ENG SYS B	PCM		2	1	S/S	-50	+250	DEG F
S R5001	P HE PRESS TANK A	PCM+	SM	1 X 1	S/S	+0	+5K	PSIA	X A963, YA11, ZA-81
S R5002	P HE PRESS TANK B	PCM+	SM	1 X 1	S/S	+0	+5K	PSIA	X A963, YA81, ZA-11
S R5003	P HE PRESS TANK C	PCM+	SM	1 X 1	S/S	+0	+5K	PSIA	X A963, YA11, ZA81



## APJ110C A P U L L C C M / S M B L O C K I M E A S U R E M E N T L I S T

SUBSYSTEM  
REACTION CONTROL

MEAS. ID MEASUREMENT DESCRIPTION

SPACECRAFT

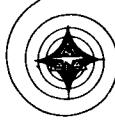
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MEAS. ID	MEASUREMENT DESCRIPTION	IM/IR	DISP	GSE	SYRO	ACCESSIBILITY	MC/PF RESPONSE	DATA RANGE	LOCATION/REMARKS
						LOW	HIGH	UNITS	
S R5004 F HE PRESS TANK D		PCM+	SM		1 X 1	S/S	+0	+5K	PSIA XA963, YA-81, ZA11
S R5065 T TEMP ENGINE PACKAGE A1		PCM	SM		1 X 1	S/S	+0	+300	DEG F XA963, YA-11, ZA-81
S R5066 T TEMP ENGINE PACKAGE B1		PCM	SM		1 X 1	S/S	+0	+300	DEG F XA963, YA-81, ZA11
S R5067 T TEMP ENGINE PACKAGE C1		PCM	SM		1 X 1	S/S	+0	+300	DEG F XA963, YA11, ZA81
S R5068 T TEMP ENGINE PACKAGE D1		PCM	SM		1 X 1	S/S	+0	+300	DEG F XA963, YA81, ZA-11
S R5729 P A HE MANIFOLD PRESS		PCM+	SM		1 X 10	S/S	+0	+400	PSIA XA963, YA-11, ZA-81
S R5776 P B HE MANIFOLD PRESS		PCM+	SM		1 X 10	S/S	+0	+400	PSIA XA963, YA81, ZA-11
S R5817 P C HE MANIFOLD PRESS		PCM+	SM		1 X 10	S/S	+0	+400	PSIA XA963, YA11, ZA81
S R5830 P D HE MANIFOLD PRESS		PCM+	SM		1 X 10	S/S	+0	+400	PSIA XA963, YA-81, ZA11



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SUBSYSTEM  
L/V EMERGENCY DETECTION

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MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	DISP_GSE	MCPE RESPONSE	DATA RANGE		LOCATION/REMARKS
						LOW	HIGH	
L	S0001	V O BALL VECTOR SUM OUTPUT	PCM	SM	1 10	S/S	+0	+5 VDC
B	S0016	X LAUNCH VEH GUIDANCE FAIL A	PCME	L	1 10	S/S	-	G FAIL EVENT INSTRUMENT UNIT
B	S0020	X LAUNCH VEH RATE_EXCESSIVE_A	PCME	L	1 12	S/S	-	R EX EVENT INSTRUMENT UNIT
B	S0030	X ENG NO 1 OUT A	PCME	L	1 10	S/S	-	E OUT EVENT INSTRUMENT UNIT
B	S0032	X ENG NO 2 OUT A	PCME	L	1 10	S/S	-	E OUT EVENT INSTRUMENT UNIT
B	S0034	X ENG NO 3 OUT A	PCME	L	1 10	S/S	-	E OUT EVENT INSTRUMENT UNIT
B	S0036	X ENG NO 4 OUT A	PCME	L	1 10	S/S	-	E OUT EVENT INSTRUMENT UNIT
B	S0038	X ENG NO 5 OUT A	PCME	L	1 10	S/S	-	E OUT EVENT INSTRUMENT UNIT
B	S0060	X LIFT OFF SIGNAL A	PCME	L	2 X 10	S/S	-	L OFF EVENT
B	S0061	X LIFT OFF SIGNAL B	PCME	L	2 X 10	S/S	-	L OFF EVENT
C	S0080	X EDS ABORT REQUEST A	PCME	L	1 10	S/S	-	A RFQ EVENT
L	S0090	X TOWER PHYS SEPARATION MON A	PCM	L	2 X 10	S/S	-	
L	S0091	X TOWER PHYS SEPARATION MON B	PCM	L	2 X 10	S/S	-	
C	S0100	X CM-SM PHYS SEPARATION MON A	PCME	L	2 X 10	S/S	B1 AT L/O	EVENT
C	S0101	X CM-SM PHYS SEPARATION MON B	PCME	L	2 X 10	S/S	B1 AT L/O	EVENT
S	S0120	X SM/ADAPTER PHYS SEPARATION MON A	PCME	L	2 X 10	S/S	B1 AT L/O	EVENT
S	S0121	X SM/ADAPTER PHYS SEPARATION MON B	PCME	L	2 X 10	S/S	B1 AT L/O	EVENT



APJ110C A P O L L I C C M / S M / B L O C K I		M E A S U R E M E N T L I S T						VL-01	
SUBSYSTEM	SPACECRAFT	17	MEASUREMENT	DESCRIPTION	TM/IR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
L/V EMERGENCY DETECTION					DISP GSE SYRQ			LOW HIGH	UNITS
B S0134 X S-11 SECND PLANE SEPARATION A	PCME	L	1	10	S/S	N0SEP	SEP	EVENT INSTRUMENT UNIT	
C S0150 X MASTER CAUTION-WARNING CN	PCME	L	1	10	S/S	WARN	NO W	EVENT	



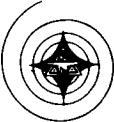
APOLLO COMMAND BLOCK MEASUREMENT LIST		MEASUREMENT			LOCATION/REMARKS	
MEAS.	TEST	DESCRIPTION	SPACECRAFT	17	LOW	HIGH UNITS
	C T0012 X	TAPF MOTION MONITOR OPERATIONAL	PCM	?	10	S/S
	C T0013 X	MOTION MONITOR R AND D	PCM	?	10	S/S
	C T0015 V	SIG CND PCS SUPPLY VOLTS	PCM+	A	? x 10	S/S
	C T0016 V	SIG GND SUPPLY VOLTS	PCM+	A	? x 10	S/S
	C T0017 V	SENSOR EXCITATION 5 VOLTS	PCM+	A	? x 10	S/S
	C T0018 V	SENSE EXCITATION 10 VOLTS	PCM+	A	? x 10	S/S
	C T0019 V	C-BAND XMTR OUTPUT MUNITCH	PCM	A	? 10	S/S
	C T0098 V	C-BAND ATTENDER OUT	PCM	A	? 10	S/S
	C T0120 X	PCM BIT RATE CHANGE 8 BIT	PCMD	A	? x 10	S/S
	C T0125 V	PCM HI LEVEL 35 PERCENT REF	PCM+	A	? x 10	S/S
	C T0126 V	PCM HI LEVEL 15 PERCENT REF	PCM+	A	? x 10	S/S
	C T0127 V	PCM LC LEVEL 85 PERCENT REF	PCM+	2 x 1	S/S	0 . . 040 VDC
	C T0128 V	PCM LO LEVEL 15 PERCENT REF	PCM+	2 x 1	S/S	.040 VDC
	C T0141 X	CIE TIMING MODE SWITCH	PCM	A	? 10	S/S
	C T0142 F	CENTRAL TIMING SWT 32 BIT	PCMD	2 x 10	S/S	
	C T0147 V	S-BAND KEC AGC VOLTAGE	PCM+	A	? x 10	S/S
	C T0191 V	VHF/AM REC AGC VOLTAGE	PCM	A	? 10	S/S



MEAS. ID	MEASUREMENT DESCRIPTION	SPACECRAFT	MEASUREMENT LIST				PAGE NO.	LOCATION/REMARKS
			TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		
			DISP	GSE	SYRO	LOW	HIGH	UNITS
C T0212 V S-BAND RCVR STATIC PHASE FRRDP		PCM+	A	2	10	S/S		
C T0215 V S-BAND XMTR DETECTED RF OUTPUT		PCM	A	2	1	S/S		
C T0261 V UDL RECEIVER SIGNAL STRENGTH		PCM+	A	2 X 10	S/S			
C T0262 V UDL SYS VALIDITY SIGNAL 8-BIT		PCMD	A	2 X 50	S/S			
C T0320 V VHF/AM XMTR DETECTED RF OUTPUT		PCM	A	2	100	S/S		
C T0330 V VHF/FM XMTR PA DETECTED RF OUT		PCM	A	2	10	S/S		
C T0340 X PCM TIMING SOURCE EXT OR INT		PCME	A	2	10	S/S	INT	EXT EVENT



MEAS.	ID	SUBSYSTEM ELECTRICAL POWER	APOLLO CLASS VI BLOCK I	MEASUREMENT LIST				DISP
				MEASUREMENT DESCRIPTION	SPACECRAFT	ACCESSIBILITY TH/TR DISP GSE	MCPF RESPONSE SYRO	
C	C0181 F	FREQUENCY AC BUS 1 PHASE 3		SM	1		+380 +420 CPS	
C	C0182 F	FREQUENCY AC BUS 1 PHASE C		SM	1		+380 +420 CPS	
C	C0183 F	FREQUENCY AC BUS 2 PHASE B		SM	1		+380 +420 CPS	
C	C0184 F	FREQUENCY AC BUS 2 PHASE C		SM	1		+380 +420 CPS	
C	C0200 V	AC VOLTAGE MAIN BUS 1 PHASE A	PCM+	SM	A	1 X 10	S/S +0 +150 VAC	
C	C0201 V	AC VOLTAGE MAIN BUS 1 PHASE B	PCM	SM	A	1 X 10	S/S +0 +150 VAC	
C	C0202 V	AC VOLTAGE MAIN BUS 1 PHASE C	PCM	SM	A	1 X 10	S/S +0 +150 VAC	
C	C0203 V	AC VOLTAGE MAIN BUS 2 PHASE A	PCM+	SM	A	1 X 10	S/S +0 +150 VAC	
C	C0204 V	AC VOLTAGE MAIN BUS 2 PHASE B	PCM	SM	A	1 X 10	S/S +0 +150 VAC	
C	C0205 V	AC VOLTAGE MAIN BUS 2 PHASE C	PCM	SM	A	1 X 10	S/S +0 +150 VAC	
C	C0206 V	DC VOLTAGE MAIN BUS A	PCM+	SM	A	1 X 10	S/S +0 +45 VDC	
C	C0207 V	DC VOLTAGE MAIN BUS B	PCM+	SM	A	1 X 10	S/S +0 +45 VDC	
C	C0210 V	DC VOLTAGE BATTERY BUS A	PCM	SM	1 X 10	S/S +0 +45 VDC		
C	C0211 V	DC VOLTAGE BATTERY BUS B	PCM	SM	1 X 10	S/S +0 +45 VDC		
C	C0212 V	DC VOLTAGE POST LANDING BATTERY	PCM	SM	1 X 10	S/S +0 +45 VDC		
C	C0213 F	FREQUENCY AC BUS 1 PHASE A	PCM	SM AP	1 X 1	S/S +380 +420 CPS		
C	C0214 V	DC VOLTAGE BATT CHARGER CUT	PCM	SM	1 10	S/S +0 +45 VDC		



## APJ110C AP C LLO C M / S M BLOCK 1 MEASUREMENT LIST VL-01

SUBSYSTEM ELECTRICAL POWER SPACECRAFT 17 SEPT 19.1966 DISP PAGE NO. 2

MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	DISP GSE SYRO	ACCESSIBILITY	MCPIF RESPONSE	DATA RANGE		LOCATION/REMARKS
							LOW	HIGH	
C	C0215	C DC CURRENT BATT CHARGER OUT	PCM+	SM	1 X 10	S/S	+0	+5 AMP	
C	C0217	F FREQUENCY AC BUS 2 PHASE A	PCM	SM AP	1 X 1	S/S	+380	+420 CPS	
C	C0222	C DC CURRENT BATTERY A	PCM	SM	1 X 10	S/S	+0	+100 AMP	
C	C0223	C DC CURRENT BATTERY B	PCM	SM	1 X 10	S/S	+0	+100 AMP	
C	C0224	C DC CURRENT POST LANDING BATTERY	PCM	SM	1 X 10	S/S	+0	+100 AMP	
C	C0227	V DC VOLTAGE PYRO BATT A	PCM	SM	1 X 10	S/S	+0	+40 VDC	
C	C0228	V DC VOLTAGE PYRO BATT B	PCM	SM	1 X 10	S/S	+0	+40 VDC	
S	C2060	P N2 PRESSURE F/C 1 REGULATED	PCM	STB	1 X 1	S/S	+0	+75 PSIA	
S	C2061	P N2 PRESSURE F/C 2 REGULATED	PCM	STB	1 X 1	S/S	+0	+75 PSIA	
S	C2062	P N2 PRESSURE F/C 3 REGULATED	PCM	STB	1 X 1	S/S	+0	+75 PSIA	
S	C2066	P 02 PRESSURE F/C 1 REGULATED	PCM	STB	1 X 10	S/S	+0	+75 PSIA	
S	C2067	P Q2 PRESSURE F/C 2 REGULATED	PCM	STB	1 X 10	S/S	+0	+75 PSIA	
S	C2068	P 02 PRESSURE F/C 3 REGULATED	PCM	STB	1 X 10	S/S	+0	+75 PSIA	
S	C2069	P H2 PRESSURE F/C 1 REGULATED	PCM	STB	1 X 10	S/S	+0	+75 PSIA	
S	C2070	P H2 PRESSURE F/C 2 REGULATED	PCM	STB	1 X 10	S/S	+0	+75 PSIA	
S	C2071	P H2 PRESSURE F/C 3 REGULATED	PCM	STB	1 X 10	S/S	+0	+75 PSIA	
S	C2081	T TEMP F/C 1 COND EXHAUST	PCM+	SM	1 X 1	S/S	+150	+250 DEG F	



VL-01

APJ110C APOLLO C.M./SM BLOCK I MEASUREMENT LIST  
SUBSYSTEM ELECTRICAL POWER

SPACECRAFT 17

DISP  
PAGE NO. 3

MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			IM/IR	GSE	LOW - HIGH UNITS	
S	C2082 T	TEMP F/C 2 COND EXHAUST	PCM+	SM	1 X 1	S/S +150 +250 DEG F
S	C2083 T	TEMP F/C 3 COND EXHAUST	PCM+	SM	1 X 1	S/S +150 +250 DEG F
S	C2084 T	TEMP F/C 1 SKIN	PCM+	SM	1 X 1	S/S +80 +550 DEG F
S	C2085 T	TEMP F/C 2 SKIN	PCM+	SM	1 X 1	S/S +80 +550 DEG F
S	C2086 T	TEMP F/C 3 SKIN	PCM+	SM	1 X 1	S/S +80 +550 DEG F
S	C2087 T	TEMP FC 1 RADIATOR OUTLET	PCM+	SIB	1 X 1	S/S -50 +300 DEG F
S	C2088 T	TEMP FC 2 RADIATOR OUTLET	PCM+	STB	1 X 1	S/S -50 +300 DEG F
S	C2089 T	TEMP FC 3 RADIATOR OUTLET	PCM+	STB	1 X 1	S/S -50 +300 DEG F
S	C2113 C	DC CURRENT F/C 1 OUTPUT	PCM+	SM	1 - 10	S/S +2 +100 AMP
S	C2114 C	DC CURRENT F/C 2 OUTPUT	PCM+	SM	1 X 10	S/S +0 +100 AMP
S	C2115 C	DC CURRENT F/C 3 OUTPUT	PCM+	"	10	S/S OFF ON EVENT
S	C2120 X	FUEL CELL 1 BUS A DISCONNECT	PCME	TB	1	S/S OFF ON EVENT
S	C2121 X	FUEL CELL 2 BUS A DISCONNECT	PCME	TB	1	S/S OFF ON EVENT
S	C2122 X	FUEL CELL 3 BUS A DISCONNECT	PCME	TB	1	S/S OFF ON EVENT
S	C2125 X	FUEL CELL 1 BUS B DISCONNECT	PCME	TB	1	S/S OFF ON EVENT
S	C2126 X	FUEL CELL 2 BUS B DISCONNECT	PCME	TB	1	S/S OFF ON EVENT
S	C2127 X	FUEL CELL 3 BUS B DISCONNECT	PCME	TB	1	S/S OFF ON EVENT



MEAS.	ID	MEASUREMENT DESCRIPTION	IM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						DISP	GSE SYRO	
S	C2139	R FLOW RATE H2 F/C 1	PCM	SM	1 X 10	S/S	+0	+0.2 LB/HR
S	C2140	R FLOW RATE H2 F/C 2	PCM	SM	1 X 10	S/S	+0	+0.2 LB/HR
S	C2141	R FLOW RATE H2 F/C 3	PCM	SM	1 X 10	S/S	+0	+0.2 LB/HR
S	C2142	R FLOW RATE G2 F/C 1	PCM	SM	1 X 10	S/S	+0	+1.6 LB/HR
S	C2143	R FLOW RATE G2 F/C 2	PCM	SM	1 X 10	S/S	+0	+1.6 LB/HR
S	C2144	R FLOW RATE G2 F/C 3	PCM	SM	1 X 10	S/S	+0	+1.6 LB/HR
S	C2160	X PH FACTOR WATER CONDITION F/C 1	PCM	STB	1 X 1	S/S	NUR	HIGH EVENT
S	C2161	X PH FACTOR WATER CONDITION F/C 2	PCM	STB	1 X 1	S/S	NUR	HIGH EVENT
S	C2162	X PH FACTOR WATER CONDITION F/C 3	PCM	STB	1 X 1	S/S	NUR	HIGH EVENT
S	C2323	X FUEL CELL 1 SHUT OFF MON	PCME	TB	1 10	S/S	CLOSE	OPEN EVENT
S	C2324	X FUEL CELL 2 SHUT OFF MON	PCME	TB	1 10	S/S	CLOSE	OPEN EVENT
S	C2325	X FUEL CELL 3 SHUT OFF MON	PCME	TB	1 10	S/S	CLOSE	OPEN EVENT



APU110C		A P O L L O C O M M / S M		B L O C K I		M E A S U R E M E N T.....L I S T		V L - 0 1	
S U B S Y S T E M	E N V I R O N M E N T A L C O N T R O L	S P A C E C R A F T		1 7		S E P T 1 9 , 1 9 6 6		D I S P	
M E A S .	I D	M E A S U R E M E N T D E S C R I P T I O N		T M / T R		A C C E S S I B I L I T Y	M C P F R E S P O N S E	D A T A R A N G E	L O C A T I O N / R E M A R K S
C	F0034	P	B A C K P R E S S	G L Y C O L	E V A P O R A T O R	PCM+	M	1 X 10	S / S + 0 . 0 5 + 0 . 2 5 P S I A



APJ110C A P O L L O . C M / S M - R . L O C K . I - M E A S U R E M E N T L I S T VL-01						
SUBSYSTEM		SPACECRAFT		DISP		
GUIDANCE AND NAVIGATION		17		PAGE NO. 6		
MEAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			TIM/TR DISP	GSE SYRD	LOW - HIGH	UNITS
C	G5000	X PIPA FAIL	PCME	X	1 X 10	S/S FAIL
C	G5001	X IMU FAIL	PCME	X	1 X 10	S/S FAIL
C	G5002	X CDU FAIL	PCME	X	1 X 10	S/S FAIL
C	G5003	X GIMBAL LOCK WARNING	PCME	X	1 X 10	S/S FAIL
C	G5005	X ERROR DETECT	PCME	X	1 10	S/S EVENT
C	G5C06	X IMU TEMP LIGHT	PCME	X	1 10	S/S OUT BD
C	G5007	X ZERO ENCODER LIGHT	PCME	X	1 10	S/S ZROING
C	G5008	X IMU DELAY LIGHT	PCME	X	1 10	S/S DELAY
C	G5020	X AGC ALARM 1 (PROGRAM)	PCME	X	1 10	S/S PROG
C	G5021	X AGC ALARM 2 (AGC ACTIVITY)	PCME	X	1 10	S/S ACTVY
C	G5022	X AGC ALARM 3 (TH)	PCME	X	1 10	S/S
C	G5023	X AGC ALARM 4 (PROG CK FAIL)	PCME	X	1 10	S/S FAIL
C	G5024	X AGC ALARM 5 (SCALAR FAIL)	PCME	X	1 10	S/S FAIL
C	G5025	X AGC ALARM 6 (PARITY FAIL)	PCME	X	1 10	S/S FAIL
C	G5026	X AGC ALARM 7 (COUNTER FAIL)	PCME	X	1 10	S/S FAIL
C	G5C27	X AGC ALARM 8 (KEY RELEASE)	PCME	X	1 10	S/S RELEASE
C	G5028	X AGC ALARM 9 (RUPPT LOCK)	PCME	X	1 10	S/S LOCK



APJ10C A P O L L O C M / S M B L O C K I M E A S U R E M E N T L I S T							VL-01
SUBSYSTEM GUIDANCE AND NAVIGATION		SPACECRAFT	17	DATA RANGE	DISP	LOCATION/REMARKS	
MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR DISP	MCPF RESPONSE GSE SYRO	LOW	HIGH	UNITS
C	G5C29	X AGC ALARM 10 (TC TRAP)	PCME	X	1	10	S/S TRAP
C	G5030	X COMPUTER POWER FAIL LIGHT	PCME	X	1	10	S/S FAIL
C	G5100	H 2X TRUN ANGLE CDU DISPLAY	X	X	1	1	
C	G5101	H SHAFT ANGLE CDU DISPLAY	X	X	1	1	EVENT
C	G5102	H ROLL ANGLE CDU DISPLAY	X	X	1	1	EVENT
C	G5103	H PITCH ANGLE CDU DISPLAY	X	X	1	1	EVENT
C	G5104	H YAW ANGLE CDU DISPLAY	X	X	1	1	EVENT
C	G5200	X ZERO ENCODE MODE SWITCH	X	X	1	1	
C	G5201	X COARSE ALIGN MODE SWITCH	X	X	1	1	
C	G5202	X FINE ALIGN MODE SWITCH	X	X	1	1	
C	G5203	X CDU MANUAL MODE SWITCH	"	X	1	1	
C	G5204	X ATTITUDE CONTROL MODE SWITCH	X	X	1	1	
C	G5205	X ENTRY MODE SWITCH	X	X	1	1	
C	G5206	X TRANSFER SWITCH	X	X	1	1	
C	G5300	H ATTITUDE ERROR DISPLAY (R,P,Y)	X	X	1	1	
C	G5400	X IMU TEMP CONTROL MODE SWITCH	X	X	1	1	
C	G5500	X SXT SPEED SWITCH	X	X	1	1	



APJ110C SUBSYSTEM GUIDANCE AND NAVIGATION	A P C L L A C M / S M H L O C K I	M E A S U R E M E N T L I S T				VL-01 DISP
		MEAS. ID	MEASUREMENT DESCRIPTION	SPACECRAFT	17	
C G5501	X OPTX JOE SWITCH		X			
C G5502	X SLAVE SCT SWITCH		X			
C G5503	X MARK SWITCH		X			
C G9000	X AGC PROGRAM DISPLAY		X			
C G9001	X AGC NOUN DISPLAY		X			
C G9002	X AGC VERB DISPLAY		X			
C G9003	X AGC DISPLAY 1		X			
C G9004	X AGC DISPLAY 2		X			
C G9005	X AGC DISPLAY 3		X		- 1	



MEAS.	ID	MEASUREMENT DESCRIPTION	SPACECRAFT	MEASUREMENT			PAGE NO.	DISP
				TM/TR	ACCESSIBILITY	MCPF RESPONSE		
C	H0100	X G-N DV MODE CONTROL	PCME	X	1 X 10	S/S	GN DV EVENT	VL-01
C	H0101	X G-N ATT MODE CONTROL	PCME	X	1 X 10	S/S	GN ATT EVENT	
C	H0102	X G-N ENTRY MODE CONTROL	PCME	X	1 X 10	S/S	GN ENT. EVENT	
C	H0103	X MONITOR MODE CONTROL	PCME	X	1 X 10	S/S	MON EVENT	
C	H1100	X SCS DV MODE CONTROL	PCME	X	1 10	S/S	SCS DV EVENT	
C	H1101	X SCS ATT MODE CONTROL	PCME	X	1 X 10	S/S	SCS ATT. EVENT	
C	H1102	X SCS ENTRY MODE CONTROL	PCME	X	1 X 10	S/S	SCS ENT EVENT	
C	H1103	X SCS LOCAL VERTICAL MODE CONTROL	PCME	X	1 X 10	S/S	SCS LV EVENT	
C	H3129	V PITCH ATT SERVO AMP OUT		X A	1	0	+30 VRMS	
C	H3130	V YAW ATT SERVO AMP OUT		X A	1	0	+30 VRMS	
C	H3131	V RCLL ATT SERVO AMP OUT		X A	1	0	+30 VRMS	
C	H3135	V PITCH GPI AMP DEMOD OUT		X A	1	-2.4	+2.4 VDC	
C	H3136	V YAW GPI AMP DEMOD OUT		X A	1	-2.7	+2.7 VDC	
C	H3250	V PITCH VELOCITY AMP DEMOD OUT		X A	1	-1.5	+1.5 VDC	
C	H3251	V YAW VELOCITY AMP DEMOD OUT		X A	1	-1.5	+1.5 VDC	
C	H3252	V FULL VELOCITY AMP DEMOD OUT		X A	1	-1.5	+1.5 VDC	
C	H3256	V PITCH ERROR AMP DEMOD OUT		X A	1	-1.5	+1.5 VDC	



APJ110C APOLLO CSM BLOCK I MEASUREMENT LIST VL-01

SUBSYSTEM AND CONTROL  
STABILIZATION AND CONTROL  
SPACECRAFT 17 SEPT 19, 1966  
DISP PAGE NO. 10MEASUREMENT DESCRIPTION TM/TR ACCESSIBILITY MCPF RESPONSE DATA RANGE  
DISP GSE SYRD LOW HIGH UNITS LOCATION/REMARKS

C H3257 V YAW ERROR AMP DEMOD OUT X A 1 -1.5 +1.5 VDC

C H3258 V ROLL ERROR SERVO AMP OUT X A 1 -1.5 +1.5 VDC

C H4322 X G-N THRUST ON/OFF PULSE TRAIN IN X A 1 0 +13 VP-P



APJ110C APOLLO COMMAND BLOCK I MEASUREMENT LIST VL-01

SUBSYSTEM SERVICE PROPULSION	MEASUREMENT ID	DESCRIPTION	IM/IR	ACCESSIBILITY	MCP/P RESPONSE	DATA RANGE	LOCATION/REMARKS
			DISP	GSE	SYRO	LOW	HIGH UNITS
S P0003 P	PRESS OXIDIZER TANKS	PCM+	N	1	10	S/S	+0 +300 PSIA
S P0005 P	PRESS FUEL TANKS	PCM+	N	1	10	S/S	+0 +300 PSIA
S P0030 X HE	ISOLATION VLV 1		TB TP	1	10	S/S	OPEN CLOSE EVENT
S P0031 X HE	ISOLATION VLV 2		TB TP	1	10	S/S	OPEN CLOSE EVENT
S P0661 P	PRESS ENGINE CHAMBER	PCM	SM	1 X 100	S/S	+0	+150 PSIA



APJ110C SUBSYSTEM REACTION CONTROL	A P C I L L U C M / S M	B L O C K I	M E A S U R E M E N T L I S T						VL-01 DISP PAGE N).
			17			17			
MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MICRO RESPONSE	DATA RANGE	LOCATION/REMARKS		
C	R0001	P HE PRESS TANK A	PCM+	SM	1 X 1	S/S	+0	+5K PSIA	
C	R0002	P HE PRESS TANK B	PCM+	SM	1 X 1	S/S	+0	+5K PSIA	
C	R0003	T HE TEMP TANK A	PCM	SM	1 1	S/S	+0	+300 DEG F	
C	R0004	T HE TEMP TANK B	PCM	SM	1 1	S/S	+0	+300 DEG F	
C	R0005	P PRESS FUEL TANK A	PCM+	SM	1 X 10	S/S	+0	+400 PSIA	
C	R0006	P PRESS FUEL TANK B	PCM+	SM	1 X 10	S/S	+0	+400 PSIA	
C	R0011	P PRESS OXIDIZER TANK A	PCM+	SM	1 X 10	S/S	+0	+400 PSIA	
C	R0012	P PRESS OXIDIZER TANK B	PCM+	SM	1 X 10	S/S	+0	+400 PSIA	
C	R1C20	X COMBINED PROP ISO VLV MCN SYS A	TB	TP	1 1	S/S	OPEN CLOSE EVENT		
C	R1O21	X COMBINED PROP ISO VLV MCN SYS B	TB	TP	1 1	S/S	OPEN CLOSE EVENT		
S	R5C01	P HE PRESS TANK A	PCM+	SM	1 X 1	S/S	OPEN CLOSE EVENT		
S	R5C02	P HE PRESS TANK B	PCM+	SM	1 X 1	S/S	+0	+5K PSIA	X A963, YA-11, ZA-11
S	R5C03	P HE PRESS TANK C	PCM+	SM	1 X 1	S/S	+0	+5K PSIA	X A963, YA-11, ZA-81
S	R5C04	P HE PRESS TANK D	PCM+	SM	1 X 1	S/S	+0	+5K PSIA	X A963, YA-81, ZA11
S	R5050	X COMBINED PROP ISO VLV MCN SYS A	TB	TP	1 1	S/S	OPEN CLOSE EVENT		
S	R5051	X COMBINED PROP ISO VLV MCN SYS B	TB	TP	1 1	S/S	OPEN CLOSE EVENT		
S	R5052	X COMBINED PROP ISO VLV MCN SYS C	TB	TP	1 1	S/S	OPEN CLOSE EVENT		

APJ110C APOLLO CSM / SSM BLOCK I MEASUREMENT LIST		VL-01	
MEAS. ID	MEASUREMENT DESCRIPTION	SPACECRAFT	PAGE NO.
		17	13
S R5053 X	COMBINED PROP 1&2 VLV MCN SYS D	TB TP 1 1	S/S OPEN CLOSE EVENT
S R5065 T	TEMP ENGINE PACKAGE A1	PCM SM 1 X 1	S/S +0 +300 DEG F YA963, YA-11, ZA-81
S R5066 T	TEMP ENGINE PACKAGE 31	PCM SM 1 X 1	S/S +0 +300 DEG F YA963, YA-81, ZA11
S R5067 T	TEMP ENGINE PACKAGE C1	PCM SM 1 X 1	S/S +0 +300 DEG F YA963, YA11, ZA81
S R5068 T	TEMP ENGINE PACKAGE D1	PCM SM 1 X 1	S/S +0 +300 DEG F YA963, YA81, YA11
S R5101 X	HF ISOLATION VLV A1 POSITION	TB TP 1 1	S/S OPEN CLOSE EVENT
S R5102 X	HF ISOLATION VLV B1 POSITION	TB TP 1 1	S/S OPEN CLOSE EVENT
S R5103 X	HF ISOLATION VLV C1 POSITION	TB TP 1 1	S/S OPEN CLOSE EVENT
S R5104 X	HF ISOLATION VLV D1 POSITION	TB TP 1 1	S/S OPEN CLOSE EVENT
S R5105 X	HF ISOLATION VLV A2 POSITION	TB TP 1 1	S/S OPEN CLOSE EVENT
S R5106 X	HF ISOLATION VLV B2 POSITION	TB TP 1 1	S/S OPEN CLOSE EVENT
S R5107 X	HF ISOLATION VLV C2 POSITION	TB TP 1 1	S/S OPEN CLOSE EVENT
S R5108 X	HF ISOLATION VLV D2 POSITION	TB TP 1 1	S/S OPEN CLOSE EVENT
S R5729 P A	HE MANIFOLD PRESS	PCM+ SM 1 X 10	S/S +0 +400 PSIA YA963, YA-11, ZA-81
S R5776 P B	HE MANIFOLD PRESS	PCM+ SM 1 X 10	S/S +0 +400 PSIA YA963, YA81, ZA-11
S R5817 P C	HE MANIFOLD PRESS	PCM+ SM 1 X 10	S/S +0 +400 PSIA YA963, YA11, ZA81
S R5830 P D	HE MANIFOLD PRESS	PCM+ SM 1 X 10	S/S +0 +400 PSIA YA963, YA-81, ZA11



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APJ110C A P O L L C C M L S M D L O C K I M E A S U R E M E N T L I S T  
 SUBSYSTEM L/V EMERGENCY DETECTION

SPACECRAFT 17

MEAS.	ID	MEASUREMENT DESCRIPTION	TIME/DISPLAY	ACCESSIBILITY	MCPIF RESPONSE	DATA RANGE		LOCATION/REMARKS
						DISP	GSE	
L	S0001	V Q BALL VECTOR SUM OUTPUT	PCM	S/M	1 10	S/S	+0	+5 VDC
B	S0016	X LAUNCH VEH GUIDANCE FAIL A	PCME	L	1 10	S/S	G	FAIL EVENT INSTRUMENT UNIT
B	S0017	X LAUNCH VEH GUIDANCE FAIL B		L	1			G FAIL EVENT INSTRUMENT UNIT
B	S0020	X LAUNCH VEH RATE EXCESSIVE A	PCME	L	1 10	S/S	R	EX EVENT INSTRUMENT UNIT
B	S0021	X LAUNCH VEH RATE EXCESSIVE B		L	1			R EX EVENT INSTRUMENT UNIT
B	S0030	X ENG NO 1 OUT A	PCME	L	1 10	S/S	E	OUT EVENT INSTRUMENT UNIT
B	S0031	X ENG NO 1 OUT B		L	1			E OUT EVENT INSTRUMENT UNIT
B	S0032	X ENG NO 2 OUT A	PCME	L	1 10	S/S	E	OUT EVENT INSTRUMENT UNIT
B	S0033	X FNG NO 2 OUT B		L	1			E OUT EVENT INSTRUMENT UNIT
B	S0034	X ENG NO 3 OUT A	PCME	L	1 10	S/S	E	OUT EVENT INSTRUMENT UNIT
B	S0035	X ENG NO 3 OUT B		L	1			E OUT EVENT INSTRUMENT UNIT
B	S0036	X ENG NO 4 OUT A	PCME	L	1 10	S/S	E	OUT EVENT INSTRUMENT UNIT
B	S0037	X FNG NO 4 OUT B		L	1			E OUT EVENT INSTRUMENT UNIT
B	S0038	X FNG NO 5 OUT A	PCME	L	1 10	S/S	E	OUT EVENT INSTRUMENT UNIT
B	S0039	X FNG NO 5 OUT B		L	1			E OUT EVENT INSTRUMENT UNIT
C	S0080	X EDS ABORT REQUEST A	PCME	L	1 10	S/S	A	REQ EVENT
C	S0081	X EDS ABORT REQUEST B		L	1			A REQ EVENT



<u>A P J 1 1 O C _ _ A P G L L C _ _ C M / S M _ _ R L O G K I</u>		<u>M E A S U R E M E N T _ L I S T</u>						<u>V L - 0 1</u>		
<u>S U B S Y S T E M</u>	<u>L / V E M E R G E N C Y D E T E C T I O N</u>	<u>S P A C E C R A F T</u>		<u>1 7</u>		<u>S E P T 1 9 , 1 9 6 6</u>	<u>D I S P</u>			
<u>M E A S .</u>	<u>I D</u>	<u>M E A S U R E M E N T D E S C R I P T I O N</u>		<u>T M / I R</u>	<u>A C C E S S I B I L I T Y</u>	<u>M C P F R E S P O N S E</u>	<u>D A T A R A N G E</u>	<u>L O C A T I O N / R E M A R K S</u>		
				<u>D I S P</u>	<u>G S F</u>	<u>S Y R O</u>	<u>L O W</u>	<u>H I G H</u>		
B	S0134	X S-11 SECOND PLANE SEPARATION A		PCME	L	1	10	S/S	NOSEP	SEP EVENT INSTRUMENT UNIT
B	S0135	X S-11 SECOND PLANE SEPARATION B		PCME	L	1	10	S/S	NOSEP	SEP EVENT INSTRUMENT UNIT
C	S0150	X MASTER CAUTION WARNING ON		PCME	L	1	10	S/S	WARN	NO NM EVENT



APJ10C

A P O U L L C C M / S M      B L O C K   I      M E A S U R E M E N T   L I S T

## SUBSYSTEM

ELECTRICAL POWER

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MEAS. ID	MEASUREMENT DESCRIPTION	IMTR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
					DISP GSF SYRD	LOW...HIGH...UNITS	
C C0120 B PHASE ROTATION AC BUS 1		P	3 1	S/S	ABC	ACB PHASE	
C C0121 B PHASE ROTATION AC HUS 2		P	3 1	S/S	ABC	ACB PHASE	
C C0209 V DC VOLTAGE POST LANDING PUS		TP	3 1	S/S	.0	+45 VDC	
C C0213 F FREQUENCY AC BUS 1 PHASE A	PCM	SM	AP 1 X 1	S/S	+380	+420 CPS	
C C0217 F FREQUENCY AC BUS 2 PHASE A	PCM	SM	AP 1 X 1	S/S	+380	+420 CPS	
C C0236 X AC UNDER-OVER-VOLTAGE BUS 1		AP	3 10	S/S	OFF	ON EVENT	
C C0237 X AC UNDER-OVER-VOLTAGE BUS 2		AP	3 10	S/S	OFF	ON EVENT	
C C0242 X OVERLOAD CURRENT AC BUS 1		AP	3 10	S/S	OFF	ON EVENT	
C C0243 X OVERLOAD CURRENT AC BUS 2		AP	3 10	S/S	OFF	ON EVENT	
C C0340 V AC VOLTAGE MAIN BUS 1 PH A		AP	3 10	S/S	+105	+130 VAC	
C C0341 V AC VOLTAGE MAIN BUS 1 PH B		AP	3 10	S/S	+105	+130 VAC	
C C0342 V AC VOLTAGE MAIN BUS 1 PH C		AP	3 10	S/S	+105	+130 VAC	
C C0343 V AC VOLTAGE MAIN BUS 2 PH A		AP	3 10	S/S	+105	+130 VAC	
C C0344 V AC VOLTAGE MAIN BUS 2 PH B		AP	3 10	S/S	+105	+130 VAC	
C C0345 V AC VOLTAGE MAIN BUS 2 PH C		AP	3 10	S/S	+105	+130 VAC	
C C0346 V DC VOLTAGE MAIN BUS A		AP	3 10	S/S	+20	+42 VDC	
C C0347 V DC VOLTAGE MAIN BUS B		AP	3 10	S/S	+20	+42 VDC	



MEAS.	ID	MEASUREMENT DESCRIPTION	BLOCK I MEASUREMENT LIST			DATA RANGE LOW HIGH UNITS	LOCATION/REMARKS
			TM/TR	DISP GSE	MCPF RESPONSE SYRQ		
S	C2075	X F/C INLINE HEATER ON	USM	3	1	S/S	EVENT
S	C2076	X F/C INLINE HEATER OFF	USM	3	1	S/S	EVENT
S	C2110	V DC VOLTAGE SM MAIN BUS A	USM	3	1	S/S	+40 VDC
S	C2111	V DC VOLTAGE SM MAIN BUS B	USM	3	1	S/S	+40 VDC
S	C2115	C DC CURRENT F/C. 3 OUTPUT	PCM+	SM	P 1 X 10	S/S	+n +100 AMP
S	C2116	V DC VOLTS FC. 1 OUTPUT	USM	3	10	S/S	+25 +40 VDC
S	C2117	V DC VOLTS FC. 2 OUTPUT	USM	3	10	S/S	+25 +40 VDC
S	C2118	V DC VOLTS FC. 3 OUTPUT	USM	3	10	S/S	+25 +40 VDC
S	C2130	X PURGE VALVE H2 F/C 1 OPERATE	TP	3	10	S/S	CLOSE OPEN EVENT
S	C2131	X PURGE VALVE H2 F/C 2 OPERATE	TP	3	10	S/S	CLOSE OPEN EVENT
S	C2132	X PURGE VALVE H2 F/C 3 OPERATE	TP	3	10	S/S	CLOSE OPEN EVENT
S	C2133	X PURGE VALVE C2 F/C 1 OPERATE	TP	3	10	S/S	CLOSE OPEN EVENT
S	C2134	X PURGE VALVE C2 F/C 2 OPERATE	TP	3	10	S/S	CLOSE OPEN EVENT
S	C2135	X PURGE VALVE C2 F/C 3 OPERATE	TP	3	10	S/S	CLOSE OPEN EVENT
S	C2325	X FC 1 O2/H2 SHUTOFF VLV OPEN HOLD	USM	3	1	S/S ...OFF	HOLD EVENT
S	C2327	X FC 2 O2/H2 SHUTOFF VLV OPEN HOLD	USM	3	1	S/S	OFF HOLD EVENT
S	C2328	X FC 3 O2/H2 SHUTOFF VLV OPEN HOLD	USM	3	1	S/S	OFF HOLD EVENT



APOLLO COMMAND/COMM/BLOCK I MEASUREMENT LIST VL-01

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MEAS.	ID	MEASUREMENT DESCRIPTION	INPUT	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			DISP	GSE	SYRO	LOW HIGH UNITS	
C	C2401	X DCV INPUT INVERTER 1	USM	3	1	S/S	0 +28V EVENT
C	C2402	X DCV INPUT INVERTER 2	USM	3	1	S/S	0 +28V EVENT
C	C2403	X DCV INPUT INVERTER 3	USM	3	1	S/S	0 +28V EVENT
S	C2410	X DC POWER DEADFACE SW OPEN	USM	3	1	S/S	OPEN CLOSE EVENT

APJ110C APPENDIX C M/L S/M BLOCK L MEASUREMENT LIST		VL-01		
MEAS.	MASTER EVENT SEQUENCE CCNTROLLER	SPACECRAFT	17	
ID	MEASUREMENT DESCRIPTION	IMTR	MCPL RFSPONSE	
		DISP GSE SYRQ	DATA RANGE	
			LOW HIGH UNITS	
			LOCATION/REMARKS	
C D0084	X MESC PYRO FIRING RLY IND SAFE A	USM	3 1 S/S	SAFE EVENT
C D0085	X MESC PYRO FIRING RLY IND SAFE B	USM	3 1 S/S	SAFE EVENT
C D0088	X MFSC LOGIC SW_IND_SAFE	USL	3 1 S/S	SAFE EVENT
C D0089	X MESC LOGIC SW_IND ARM	USI	3 1 S/S	ARM EVENT
C D0135	X ECS ABORT LOGIC OUT A	PCME	AP 2 10/100S/S	ABORT EVENT
C D0136	X EDS ABORT LOGIC OUT B	PCME	AP 2 10/100S/S	ABORT EVENT
C D0218	X MESC PYRO SWITCH IND SAFE	USI	3 1 S/S	SAFE EVENT
C D0219	X MESC PYRO SWITCH IND ARM	USI	3 1 S/S	SAFE EVENT
C D0270	X CM RCS CCNTROLLERS_A AND_B_SAFE	USM	3 1 S/S	SAFE EVENT
C D0320	X EDS UNSAFE A	USI	3 1 S/S	EVENT
C D0321	X EDS UNSAFE B	USI	3 1 S/S	EVENT
S D0350	V SM BATT MCNTOR A	USM	3 1 S/S	0 +40 VDC
S D0351	V SM BATT MONITOR B	USM	3 1 S/S	0 +40 VDC
S D0352	X SM JETTISON SAFE A	USM	3 1 S/S	SAFE EVENT
S D0353	X SM JETTISON SAFE B	USM	3 1 S/S	SAFE EVENT
C D0560	X MFSC TDI SYSTEM A 30 MILLISFC	AP	3 100 S/S	END EVENT
C D0561	X MESC TDI SYSTEM B 30 MILLISEC	AP	3 100 S/S	END EVENT



MEASUREMENT LIST							VL-01
SUBSYSTEM MASTER EVENT SEQUENCE	SPACECRAFT	17	TIME/SEC	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
C D0562 X MESC TD2 SYSTEM A 30 MILLISEC			AP	3 100	S/S	END EVENT	
C D0563 X MESC TD2 SYSTEM B 30 MILLISEC			AP	3 100	S/S	END EVENT	
C D0564 X MESC TD3 SYSTEM A 0.1 SEC			AP	3 100	S/S	END EVENT	
C D0565 X MESC TD3 SYSTEM B 0.1 SEC			AP	3 100	S/S	END EVENT	
C D0566 X MESC TD4 SYSTEM A 0.1 SEC			AP	3 100	S/S	END EVENT	
C D0567 X MESC TD4 SYSTEM B 0.1 SEC			AP	3 100	S/S	END EVENT	
C D0568 X MESC TD5 SYSTEM A 11 SEC			AP	3 10	S/S	END EVENT	
C D0569 X MESC TD5 SYSTEM B 11 SEC			AP	3 10	S/S	END EVENT	
C D0570 X MESC TD6 SYSTEM A 11 SEC			AP	3 10	S/S	END EVENT	
C D0571 X MESC TD6 SYSTEM B 11 SEC			AP	3 10	S/S	END EVENT	
C D0572 X MESC TD7 SYSTEM A 3 SEC			AP	3 10	S/S	END EVENT	
C D0573 X MESC TD7 SYSTEM B 3 SEC			AP	3 10	S/S	END EVENT	
C D0574 X MESC TD8 SYSTEM A 3 SEC			AP	3 10	S/S	END EVENT	
C D0575 X MESC TD8 SYSTEM B 3 SEC			AP	3 10	S/S	END EVENT	
C D0580 X MESC TD11 SYSTEM A 1.7 SEC			AP	3 10	S/S	END EVENT	
C D0581 X MESC TD11 SYSTEM B 1.7 SEC			AP	3 10	S/S	END EVENT	
C D0582 X MESC TD12 SYSTEM A 1.7 SEC			AP	3 10	S/S	END EVENT	



APJ110C MASTER EVENT SURFACE COUNT:CLIFF	SUBSYSTEM MEASUREMENT DESCRIPTION	BLOCK I SPACECRAFT	MEASUREMENT LISTS			PAGE NO. 6	LOCATION/REMARKS
			TIME/TR	ACCESSIBILITY DISP	MCPF RESPONSE SYRO		
C D0583 X MESC TD12 SYSTEM A 1.7 SEC		AP 3 10 S/S		FNU EVENT			
C D0584 X MESC TD13 SYSTEM A 0.9 SEC		AP 3 10 S/S		END EVENT			
C D0585 X MESC TD13 SYSTEM B 0.8 SEC		AP 3 10 S/S		END EVENT			
C D0586 X MESC TD14 SYSTEM A 0.8 SEC		AP 3 10 S/S		END EVENT			
C D0587 X MESC TD14 SYSTEM B 0.8 SEC		AP 3 10 S/S		END EVENT			
C D0588 X MESC TD15 SYSTEM A 1.0 SEC		AP 3 10 S/S		END EVENT			
C D0589 X MESC TD15 SYSTEM B 1.0 SEC		AP 3 10 S/S		END EVENT			
C D0590 X MESC TD16 SYSTEM A 1.0 SEC		AP 3 10 S/S		END EVENT			
C D0591 X MESC TD16 SYSTEM B 1.0 SEC		AP 3 10 S/S		END EVENT			
C D0592 X MESC TD17 SYSTEM A 0.4 SEC		AP 3 10 S/S		END EVENT			
C D0593 X MESC TD17 SYSTEM B 0.4 SEC		AP 3 10 S/S		END EVENT			
C D0594 X MESC TD18 SYSTEM A 0.4 SEC		AP 3 10 S/S		END EVENT			
C D0595 X MESC TD18 SYSTEM B 0.4 SEC		AP 3 10 S/S		END EVENT			
C D0596 X MESC TD 23 SYSTEM A 1.7 SEC		AP 3 10 S/S		END EVENT			
C D0597 X MESC TD 23 SYSTEM B 1.7 SEC		AP 3 10 S/S		END EVENT			
C D0646 X MESC TD 24 SYSTEM A 1.7 SEC		AP 3 10 S/S		END EVENT			
C D0647 X MESC TD 24 SYSTEM B 1.7 SEC		AP 3 10 S/S		END EVENT			



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SUBSYSTEM  
MASTER EVENT SEQUENCE CONTROLLER

SPACECRAFT

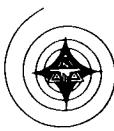
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## MEAS. IIC MEASUREMENT DESCRIPTION TIME/TR. ACCESSIBILITY MCPF RESPONSE DATA RANGE LOCATION/REMARKS

			DISP	GSE	SYRO	LOW	HIGH	UNITS	
S	D0660	X SMJC Z2TD1 SYS A 2 SEC	TP	3	10	S/S			END EVENT
S	D0661	X SMJC Z2TD1 SYS B 2 SEC	TP	3	10	S/S			END EVENT
S	D0662	X SMJC Z2TD2 SYS A 2 SEC	TP	3	10	S/S			END EVENT
S	D0663	X SMJC Z2TD2 SYS B 2 SEC	TP	3	10	S/S			END EVENT
S	D0664	X SMJC Z3TD1 SYS A 5.5 SEC	TP	3	1	S/S			END EVENT
S	D0665	X SMJC Z3TD1 SYS B 5.5 SEC	TP	3	1	S/S			END EVENT
S	D0666	X SMJC Z3TD2 SYS A 5.5 SEC	TP	3	1	S/S			END EVENT
S	D0667	X SMJC Z3TD2 SYS B 5.5 SEC	TP	3	1	S/S			END EVENT
C	D1008	X PITCH CCNT MOTOR FIRE RELAY A	AP	3	10	S/S			FIRE EVENT
C	D1009	X PITCH CCNT MOTOR FIRE RELAY B	AP	3	10	S/S			FIRE EVENT



APU11C SUBSYSTEM EARTH LANDING SEQUENCE CONTROLLER	AP C U L C C M / S M MEASUREMENT ID	BLOCK I SPACECRAFT 17	MEASUREMENT LIST				PAGE NO. 8	SEPT 19, 1966 ACE
			MEASUREMENT DESCRIPTION	TMR DISP GSE	ACCESSIBILITY SYRO	MCPF RESPONSE		
C E0025 X BAROSWITCH S1 SYSTEM A	AP	3 10	S/S				CLOSE EVENT	
C E0026 X BAROSWITCH S3 SYSTEM A	AP	3 10	S/S				CLOSE EVENT	
C E0027 X BAROSWITCH S3 SYSTEM B	AP	3 10	S/S				CLOSE EVENT	
C E0029 X BAROSWITCH S1 SYSTEM B	AP	3 10	S/S				CLOSE EVENT	
C E0030 X BAROSWITCH S2 SYSTEM A	AP	3 10	S/S				CLOSE EVENT	
C F0031 X BAROSWITCH S2 SYSTEM B	AP	3 10	S/S				CLOSE EVENT	
C E0032 X BAROSWITCH S4 SYSTEM A	AP	3 10	S/S				CLOSE EVENT	
C E0033 X BAROSWITCH S4 SYSTEM B	AP	3 10	S/S				CLOSE EVENT	
C E0040 X FLS TIME DELAY T01 SYS A 2 SEC	AP	3 10	S/S				END EVENT	
C E0041 X FLS TIME DELAY T01 SYS B 2 SEC	AP	3 10	S/S				END EVENT	
C E0042 X FLS TIME DELAY T02 SYS A 2 SEC	AP	3 10	S/S				END EVENT	
C E0043 X FLS TIME DELAY T02 SYS B 2 SEC	AP	3 10	S/S				END EVENT	
C E0044 X FLS TIME DELAY T03 SYS A 14 SEC	AP	3 10	S/S				END EVENT	
C E0045 X FLS TIME DELAY T03 SYS B 14 SEC	AP	3 10	S/S				END EVENT	
C E0046 X FLS TIME DELAY T04 SYS A 14 SEC	AP	3 10	S/S				END EVENT	
C F0047 X FLS TIME DELAY T04 SYS B 14 SEC	AP	3 10	S/S				END EVENT	
C E0310 X FLS PYR1 RELAY K1 SAFE A	USM	3 1	S/S				SAFE EVENT	



APJ110C A P C L L C C M / S M B L O C K I M E A S U R E M E N T L I S T VL-01

SUBSYSTEM	MEASUREMENT SEQUENCE CONTROLLER	SPACECRAFT	17	DATA RANGE	LOCATION/REMARKS	
MEAS.	1)	MEASUREMENT DESCRIPTION	TMR	MCPF RESPONSE DISP GSE SYRO	LOW HIGH UNITS	
C	E0311	X ELS PYRO RELAY K2 SAFE A	USM	3 1	S/S	SAFE EVENT
C	E0312	X ELS PYRO RELAY K3 SAFE A	USM	3 1	S/S	SAFE EVENT
C	E0313	X ELS PYRO RELAY K4 SAFE A	USM	3 1	S/S	SAFE EVENT
C	E0314	X ELS PYRO RELAY K1 SAFE B	USM	3 1	S/S	SAFE EVENT
C	E0315	X ELS PYRO RELAY K2 SAFE B	USM	3 1	S/S	SAFE EVENT
C	E0316	X ELS PYRO RELAY K3 SAFE B	USM	3 1	S/S	SAFE EVENT
C	E0317	X ELS PYRO RELAY K4 SAFE B	USM	3 1	S/S	SAFE EVENT



APJ110C A P O L L O C M / S M B L O C K I M E A S U R E M E N T L I S T VL-01

SUBSYSTEM ENVIRONMENTAL CONTROL

SPACECRAFT 17

MEAS.	ID	MEASUREMENT DESCRIPTION	TIME	ACCESSIBILITY	MCP/P RESPONSE	DATA RANGE	LOCATION/REMARKS
			DISP	GSE	SYRU	LOW	HIGH UNITS
S	FOC92	X PRESS LOW G2 TANKS 1 AND 2	TP	3	1	S/S	NOR LOW EVENT
S	FOC93	X MOTOR SW-CLOSED TANKS 1 AND 2	TP	3	1	S/S	OPEN CLOSE EVENT
S	FOC94	X PRESS LOW H2 TANKS 1 AND 2	TP	3	1	S/S	NOR LOW EVENT
S	FOC95	X MOTOR SW-CLOSED H2 TANKS 1 AND 2	TP	3	1	S/S	OPEN CLOSE EVENT
S	F0360	V FAN MOTOR OPERATION TANK 1 07	TP	3	1	S/S	OPEN CLOSE EVENT
S	F0361	V FAN MOTOR OPERATION TANK 2 02	TP	3	1	S/S	OPEN CLOSE EVENT
S	F0362	V FAN MOTOR OPERATION TANK 1 H2	TP	3	1	S/S	
S	F0363	V FAN MOTOR OPERATION TANK 2 H2	TP	3	1	S/S	



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SPACECRAFT

APJ110C APOLLO C.M./SM BLOCK I MEASUREMENT LIST

SUBSYSTEM  
GUIDANCE AND NAVIGATION

MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						DISP GSE	SYRO	
C	G1000	V +120 VDC IRIG SUPPLY	AP	3	1	S/S	0	+150 VDC PSA TRAY 2
C	G1001	V +120 VDC IRIG SUPPLY NOISE RMS	P	3	1	S/S	0	2 VRMS PSA TRAY 2
C	G1003	V +12 VDC IRIG SUPPLY	AP	3	1	S/S	+0	+15 VDC PSA TRAY 2
C	G1006	V +32 VDC IRIG SUPPLY	AP	3	1	S/S	+0	+40 VDC PSA TRAY 2
C	G1010	V +120 VDC PIPA SUPPLY	AP	3	1	S/S	0	+150 VDC PSA TRAY 7
C	G1011	V +120 VDC PIPA NOISE RMS	P	3	1	S/S	0	2 VRMS PSA TRAY 7
C	G1016	V +32 VDC PIPA SUPPLY	AP	3	1	S/S	0	+60 VDC PSA TRAY 2
C	G1020	V +13 VDC AGC SUPPLY	AP	3	1	S/S	+0	+20 VDC PSA TRAY 10
C	G1021	V +13 VDC AGC SUPPLY NOISE RMS	P	3	1	S/S	0	0.8 VRMS PSA TRAY 10
C	G1022	X +13 VDC AGC SUPPLY NOISE PEAKS	P	3	10	S/S	-	GLITCH EVENT PSA TRAY 10
C	G1030	V +3 VDC AGC SUPPLY	AP	3	1	S/S	0	+5 VDC PSA TRAY 10
C	G1031	Y +3 VDC AGC SUPPLY NOISE RMS	P	3	1	S/S	0	0.8 VRMS PSA TRAY 10
C	G1032	X +3 VDC AGC SUPPLY NOISE PEAKS	P	3	10	S/S	-	GLITCH EVENT PSA TRAY 10
C	G1201	V IMU 28V • 8KC 1 PCT 0 DEG SUP RMS	AP	3	1	S/S	0	33.6 VRMS PSA TRAY 2
C	G1202	V IMU 28V • 8KC 5 PCT 90DEG SUP RMS	AP	3	1	S/S	0	33.6 VRMS PSA TRAY 2
C	G1203	V IMU 28V • 8KC 5 PCT 0 DEG SUP RMS	AP	3	1	S/S	0	33.6 VRMS PSA TRAY 2
C	G1204	V CDU 28V • 8KC 5PCT-90 DEG SUP RMS	AP	3	1	S/S	0	33.6 VRMS PSA TRAY 10



MEAS.	IC	MEASUREMENT	DESCRIPTION	IMU/TR	ACCESSIBILITY	MCFF RESPONSE	DATA RANGE			LOCATION/REMARKS
							DISP	GSE	SYRO	
C G1206	B	PH DIFF	IMU 1-5 PCT 0--90 DEG	P	3 1	S/S	-135	-45	DEG	PSA TRAY 2
C G1207	B	PH DIFF	IMU 5-5 PCT -90-0 DEG	P	3 1	S/S	-135	-45	DEG	PSA TRAY 2
C G1209	B	PH DIFF	CDU 5P 90D IMU 1P 0 DEG	P	3 1	S/S	-135	-45	DEG	PSA TRAY 10
C G1211	V	CPTX 28V	*8KC 1PCT 0 DEG SUP RMS	AP	3 1	S/S	0	33.6	VRMS	PSA TRAY 6
C G1212	V	OPTX 28V	*8KC 5 PCT -90D SUP RMS	AP	3 1	S/S	0	33.6	VRMS	PSA TRAY 6
C G1216	B	PH DIFF	OPTX 1-5 PCT 0--90 DEG	P	3 1	S/S	-135	-45	DEG	PSA TRAY 6
C G1220	B	PH DIFF	OPTX 1PCT IMU 5 PCT	AP	3 1	S/S	-45	+45	DEG	
C G1301	V	IMU 2V	3200 CPS SUPPLY RMS	AP	3 1	S/S	0	5	VRMS	PSA TRAY 1
C G1302	V	20V 3.2KC	SQ WAVE SUPPLY RMS	AP	3 1	S/S	-0	25	VRMS	PSA TRAY 1
C G1306	B	PHASE DIFF	IMU 2V 3.2KC AGC SYNC	P	3 1	S/S	-45	+45	DEG	PSA TRAY 1
C G1400	V	IMU 2V	25.6KC SUPPLY IN PH	AP	3 1	S/S	0	3	VRMS	PSA TRAY 2
C G1401	V	OPTX 2V	25.6KC SUPPLY IN PH	AP	3 1	S/S	0	3	VRMS	PSA TRAY 2
C G1402	B	PH DIFF	IMU 25.6KC UPTX 25.6KC	AP	3 1	S/S	0	+180	DEG	
C G1500	V	+28 VDC	BUS 1	AP	3 1	S/S	0	35	VDC	PSA TRAY 10
+C G1501	V	+28 VDC	BUS 1 NOISE RMS	P	3 1	S/S	0	2	VRMS	PSA TRAY 10
C G1502	X	+28 VDC	BUS 1 NOISE PEAKS	P	3 10	S/S			GLITCH EVENT	PSA TRAY 10
C G1510	V	+28 VDC	BUS 2	AP	3 1	S/S	0	35	VDC	PSA TRAY 10



MEAS. ID	MEASUREMENT DESCRIPTION	MEASUREMENT LIST						PAGE NO.	LOCATION/REMARKS
		TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOW	HIGH		
C G1511 V +29 VDC BUS 2	NOISE RMS	P	3 1	S/S	0	2	VRMS	PSA TRAY 10	VL-01
C G1512 X +29 VDC BUS 2	NOISE PEAKS	P	3 10	S/S	GLITCH EVENT PSA TRAY 10				
C G1520 V +29 VDC BUS 3		AP	3 1	S/S	0	35	VDC	PSA TRAY 10	
C G1521 V +28 VDC BUS 3	NOISE RMS	P	3 1	S/S	0	2	VRMS	PSA TRAY 10	
C G1522 X +28 VDC BUS 3	NOISE PEAKS	P	3 10	S/S	GLITCH EVENT PSA TRAY 10				
C G1530 V +29 VDC BUS 4		AP	3 1	S/S	0	35	VDC	PSA TRAY 10	
C G1531 V +28 VDC BUS 4	NOISE RMS	P	3 1	S/S	0	2	VRMS	PSA TRAY 10	
C G1532 X +29 VDC BUS 4	NOISE PEAKS	P	3 10	S/S	GLITCH EVENT PSA TRAY 10				
C G2000 V Y PIPA SG OUTPUT RMS		AP	3 1	S/S	0	1.0	VRMS	PSA TRAY 3	
C G2002 V X PIPA SG OUTPUT QUAD		P	3 1	S/S	-0.6	+0.6	VRMS	PSA TRAY 3	
C G2020 V Y PIPA SG OUTPUT RMS		AP	3 1	S/S	0	1.0	VRMS	PSA TRAY 3	
C G2022 V Y PIPA SG OUTPUT QUAD		P	3 1	S/S	-0.6	+0.6	VRMS	PSA TRAY 3	
C G2040 V Z PIPA SG OUTPUT RMS		P	3 100	S/S	0	1.0	VRMS	PSA TRAY 4	
C G2042 V Z PIPA SG OUTPUT QUAD		P	3 1	S/S	-0.6	+0.6	VRMS	PSA TRAY 4	
C G2107 V IGA SERVO FRRJ3 IN PHASE		P	3 1*	S/S	-2.5	+2.5	VRMS	PSA TRAY 1	
C G2108 V IGA SERVO ERROR QUAD		P	3 1	S/S	-3.0	+3.0	VRMS	PSA TRAY 1	
C G2135 V Z IRIG PRE AMP OUTPUT QUAD		AP	3 1	S/S	-0.25	+0.25	VRMS	PSA TRAY 5	



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APJ1LOC ADULT COMM / SMM BLOCK I MEASUREMENT LIST

SUBSYSTEM GUIDANCE AND NAVIGATION

MEAS. ID: 4 MEASUREMENT DESCRIPTION  
SPACESHIP 17

MEAS. ID:	4 MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RFSENSE	DISP GSE SYRO	DATA RANGE		LOCATION/REMARKS
						LOW	HIGH	
C G2137 V MGA SERVO ERROR IN PHASE		P	3	1*	S/S	-2.5	+2.5	VRMS PSA TRAY 1
C G2138 V MGA SERVO ERROR QUAD		P	3	1	S/S	-3.0	+3.0	VRMS PSA TRAY 4
C G2165 V X IRIG PRE AMP JUTPUT QUAD		AP	3	1	S/S	-0.25	+0.25	VRMS PSA TRAY 5
C G2167 V DGA SERVO ERROR IN PHASE		P	3	1*	S/S	-2.5	+2.5	VRMS PSA TRAY 1
C G2168 V DGA SERVO ERROR QUAD		P	3	1	S/S	-3.0	+3.0	VRMS PSA TRAY 1
C G2201 V IGA CDU FAIL SIGNAL		AP	3	1	S/S	0	5	VRMS PSA TRAY 6
C G2204 V IGA CDU 16X PES ERROR IN PHASE		AP	3	10	S/S	-5.0	+5.0	VRMS PSA TRAY 6
C G2205 V IGA CDU 16X RES ERROR RMS		AP	3	1	S/S	0	5.0	VRMS
C G2207 V IGA CDU 1X RES ERROR RMS		AP	3	1	S/S	0	5.0	VRMS
C G2209 V SCS PITCH IN PHASE		AP	3	1*	S/S	-10	+10 DEG	PSA TRAY 7
C G2214 V IGD DAC ERROR SIGNAL IN PHASE		AP	3	1*	S/S	0	6.0	VRMS PSA TRAY 5
C G2231 V MGA CDU FAIL SIGNAL RMS		AP	3	1	S/S	0	5	VRMS PSA TRAY 6
C G2234 V MGA CDU 16X PES ERROR IN PHASE		AP	3	10	S/S	-5.0	+5.0	VRMS PSA TRAY 6
C G2235 V MGA CDU 16X RES ERROR RMS		AP	3	1	S/S	0	0.5	VRMS
C G2237 V MGA CDU 1X PES ERROR RMS		AP	3	1	S/S	0	5.0	VRMS
C G2239 V SCS YAW BODY AXIS IN PHASE		AP	3	1*	S/S	-10	+10 DEG	PSA TRAY 7
C G2241 V SCS YAW OFFSET AXIS IN PHASE		AP	3	1*	S/S	-10	+10 DEG	PSA TRAY 6



APJ110C	A P C L L O C M A S M B L O C K I	M E A S U R E M E N T L I S T	VL-01		
SUBSYSTEM	GUIDANCE AND NAVIGATION	SPACECRAFT	17		
MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR DISP	ACCESSIBILITY MCPP RESPONSE GSE SYRO	DATA RANGE LOW HIGH UNITS	LOCATION/REMARKS
C G2244 V	MG DAC ERROR SIGNAL IN PHASE	AP	3 1*	S/S 0 6.0 VRMS	PSA TRAY 5
C G2261 V	OGA CDU FAIL SIGNAL RMS	AP	3 1	S/S 0 5.0 VRMS	PSA TRAY 6
C G2264 V	OGA CDU 16X RES. ERROR IN PHASE	AP	3 10	S/S -2.0 +5.0 VRMS	PSA TRAY 6
C G2265 V	OGA CDU 16X RES. ERROR RMS	AP	3 1	S/S 0 0.5 VRMS	
C G2267 V	OGA CDU 1X RES. ERROR RMS	AP	3 1	S/S 0 5.0 VRMS	
C G2269 V	SCS ROLL BODY AXIS IN PHASE	AP	3 1*	S/S -1.0 +10 DEG	PSA TRAY 7
C G2271 V	SCS ROLL OFFSET AXIS IN PHASE	AP	3 1*	S/S -10 +10 DEG	PSA TRAY 7
C G2274 V	CG DAC ERROR SIGNAL IN PHASE	AP	3 1*	S/S 0 6.0 VRMS	PSA TRAY 5
C G2304 V	IMU TEMP CONTROL BRIDGE SUPPLY	AP	3 1	S/S 0 30 YDC	PSA TRAY 7
C G3101 V	SXT TRUN 16X RES. ERROR IN PHASE	AP	3 10	S/S -2.0 +2.0 VRMS	PSA TRAY 9
C G3103 V	SXT TRUN MOTOR DRIVE QUAD	AP	3 1	S/S -10.0 +10.0 VRMS	PSA TRAY 9
C G3111 V	SXT SHAFT 16X RES. ERROR IN PHASE	AP	3 10*	S/S -2.0 +2.0 VRMS	PSA TRAY 9
C G3120 V	SCT TRUN 1X RES. ERROR IN PHASE	AP	3 10*	S/S -1.2 +1.2 VRMS	PSA TRAY 9
C G3124 V	SCT SHAFT TACH FEEDBACK IN PH	AP	3 10	S/S	
C G3131 V	SCT SHAFT 1X RES. ERROR IN PHASE	AP	3 10*	S/S -1.2 +1.2 VRMS	
C G3134 V	SCT TRUN TACH FEEDBACK IN PH	AP	3 10	S/S	
C G3201 V	TRUN CDU MOTOR DRIVE QUAD	AP	3 1	S/S -10.0 +10.0 VRMS	PSA TRAY 8



APJLOC	APPLICATION	COMM / S/N	BLOCK I	MEASUREMENT LIST			VL-01
				SPACECRAFT	17		
SUBSYSTEM	GUIDANCE AND NAVIGATION			SEPT 19, 1966	ACE		
MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY DISP GSF	MCPF RESPONSE SYRO	DATA RANGE LOW HIGH UNITS	LOCATION/REMARKS
C	G3206	V TRUN CDU TACH OUTPUT IN PH	AP	3	10*	S/S -10.0 +10.0 VRMS	PSA TRAY 8
C	G3220	V SHAFT CDU MOTOR DRIVE IN PHASE	AP	3	10	S/S -10.0 +10.0 VRMS	PSA TRAY 8
C	G3221	V SHAFT CDU MOTOR DRIVE QUAD	AP	3	1	S/S -10.0 +10.0 VRMS	PSA TRAY 8
C	G3226	V SHAFT CDU TACH OUTPUT IN PH	AP	3	10*	S/S -10.0 +10.0 VRMS	PSA TRAY 8



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APOLLO COMMAND AND MEASUREMENT TESTS  
SUBSYSTEM  
STABILIZATION AND CONTROL  
SPACECRAFT

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MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			DISP	GSE	SYRO	LOW	HIGH UNITS
C	H0020	H G-N PITCH ERROR DEMOD IN	AP	3	1	S/S	-10 +10 DEG
C	H0026	V PITCH 1 POS FEEDBACK DEMOD OUT	AP	3	100	S/S	+1.70 -1.70 DEG
C	H0027	V PITCH 2 VEL GEN DEMOD OUT	AP	3	50	S/S	-20.0 +20.0 DEG/S
C	H0029	V PITCH 2 POS FEEDBACK DEMOD OUT	AP	3	50	S/S	+0.50 -0.50 DEG
C	H0033	V PITCH 1 VEL GEN DEMOD OUT	AP	3	200	S/S	-1.75 +1.75 VDC
C	H0036	V PTV INTEGRATOR AMP OUT	AP	3	10	S/S	-25 +25 VDC
C	H0037	V PTV SERVO 1 + CLUTCH VOLTS	AP	3	50	S/S	+0 +25 VDC
C	H0038	V PTV SERVO 1 - CLUTCH VOLTS	AP	3	50	S/S	+0 -25 VDC
C	H0040	V PTV SERVO 2 + CLUTCH VOLTS	AP	3	50	S/S	+0 +25 VDC
C	H0041	V PTV SERVO 2 - CLUTCH VOLTS	AP	3	50	S/S	+0 -25 VDC
C	H0045	V PITCH RATE GYRO NULL OUT	AP	3	1	S/S	-0.5 +0.5 VRMS
C	H0053	V PTV GIMBAL POS COMD	AP	3	1	S/S	-22.5 +22.5 VDC
C	H0060	V PITCH TOTAL ERROR AMP OUT	AP	3	10	S/S	-25 +25 VDC
C	H0076	V PITCH AG PRE AMP OUT	AP	3	10	S/S	-3.0 +3.0 VRMS
C	H0085	X PITCH/X SCOLENOID DRIVERS DISABLE	AP	3	1	S/S	DISABLE EVENT
C	H0209	X P TVC ELECT TRANSFER RELAY	AP	3	1	S/S	TRANS. EVENT
C	H0214	X ENGINE IGNITION RELAY	AP	3	1	S/S	IGN. EVENT



APJ110C A P U L L O C M / S M B L U C K I M E A S U R E M E N T L I S T VL-01

SUBSYSTEM  
STABILIZATION AND CONTROL

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MEAS.	ID	MEASUREMENT DESCRIPTION	TMR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
			DISP GSE SYRO			LOW HIGH UNITS	
C	H0217	X P AUTO-INTERRUPT RELAY	AP	3 1	S/S	-	INTRPT EVENT
C	H0413	V PTV LIMITER AMP OUT	AP	3 50	S/S	-25 +25	VDC
C	H0613	V PTV LIMITER AMP NULL	AP	3 1	S/S	-2.5 +2.5	VDC
C	H0660	V PITCH TOTAL ERROR AMP NULL	AP	3 1	S/S	-2.5 +2.5	VDC
C	H1020	H G-N YAW ERROR DEMOD IN	AP	3 1	S/S	-10 +10	DEG
C	H1026	V YAW 1 POS FEEDBACK DEMOD OUT	AP	3 100	S/S	+5.80 +2.40	DEG
C	H1027	V YAW 2 VEL GEN DEMOD OUT	AP	3 50	S/S	-20.0 +20.0	DEG/S
C	H1029	V YAW 2 POS FEEDBACK DEMOD OUT	AP	3 50	S/S	+4.50 +3.00	DEG
C	H1033	V YAW 1 VEL GEN DEMOD OUT	AP	3 200	S/S	-1.75 +1.75	VDC
C	H1036	V YTV INTEGRATOR AMP OUT	AP	3 10	S/S	-25 +25	VDC
C	H1037	V YTV SERVO 1 + CLUTCH VOLTS	AP	3 50	S/S	+0 +25	VDC
C	H1038	V YTV SERVO 1 - CLUTCH VOLTS	AP	3 50	S/S	+0 -25	VDC
C	H1040	V YTV SERVO 2 + CLUTCH VOLTS	AP	3 50	S/S	+0 +25	VDC
C	H1041	V YTV SERVO 2 - CLUTCH VOLTS	AP	3 50	S/S	+0 -25	VDC
C	H1045	V YAW RATE GYRO NULL OUT	AP	3 10	S/S	-0.5 +0.5	V RMS
C	H1053	V YTV MAN GIMBAL POSITION COMD	AP	3 1	S/S	-22.5 +22.5	VDC
C	H1060	V YAW TOTAL ERROR AMP OUT	AP	3 10	S/S	-25 +25	VDC



APJ110C		A_P_O_L_L_O_C_M / S_M		B_L_O_C_K_I		M_E_A_S_U_R_E_M_E_N_T_L_I_S_I		YL-01	
SUBSYSTEM STABILIZATION AND CONTROL		SPACECRAFT		IMTR		MCPF RESPONSE DISP GSE SYRO		DATA RANGE LOW HIGH UNITS LOCATION/REMARKS	
MEAS.	ID	MEASUREMENT DESCRIPTION		ACCESSIONABILITY		MCPF RESPONSE			
				AP	3 10	S/S	-3.0 +3.0		VRMS
C	H1076	V YAW AG	PRE AMP OUT	AP	3 10	S/S	-3.0 +3.0		VRMS
C	H1085	X YAW/X SOLENCID	DRIVERS DISABLE	AP	3 1	S/S	DISABLE		EVENT
C	H1209	X Y IVC	ELEC TRANSFER RELAY	AP	3 1	S/S	TRANS	EVENT	
C	H1217	X Y AUTO	INTERRUPT RELAY	AP	3 1	S/S	INTRPT	EVENT	
C	H1413	V YTV	LIMITER AMP NULL	AP	3 50	S/S	-25 +25	VDC	
C	H1613	V YTV	LIMITER AMP NULL	AP	3 1	S/S	-2.5 +2.5	VDC	
C	H1660	V YAW	TOTAL ERROR AMP NULL	AP	3 1	S/S	-2.5 +2.5	VDC	
C	H2016	F PITCH AG	SMRD	AP	3 10	S/S	0 801	CPS	
C	H2017	F YAW AG	SMRD	AP	3 10	S/S	0 801	CPS	
C	H2018	F ROLL AG	SMRD	AP	3 10	S/S	0 801	CPS	
C	H2020	H G-N	ROLL ERROR DEMOD IN	AP	3 10	S/S	-10 +10	DEG	
C	H2027	F PITCH RG	SMRD	AP	3 10	S/S	0 1601	CPS	
C	H2028	F YAW RG	SMRD	AP	3 10	S/S	0 1601	CPS	
C	H2029	F ROLL	RG SMRD	AP	3 10	S/S	0 1601	CPS	
C	H2045	V PCLL RATE	GYRO NULL OUT	AP	3 10	S/S	-0.5 +0.5	VRMS	
C	H2060	V RCLL TOTAL	ERROR AMP OUT	AP	3 10	S/S	-25 +25	VDC	
C	H2076	V ROLL	AG PRE AMP OUT	AP	3 10	S/S	-3.0 +3.0	VRMS	



APJ110C APOLLO CM / SM BLOCK I MEASUREMENT LIST VL=01						
SUBSYSTEM STABILIZATION AND CONTROL		SPACECRAFT	17	DATA RANGE	LLOW HIGH	UNITS
MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR DISP GSE SYRO	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
C	H2085	X R/Z SOLENOID DRIVERS DISABLE 1	AP	3 1	S/S DISABLE	EVENT
C	H2086	X R/Y SOLENOID DRIVERS DISABLE 2	AP	3 1	S/S DISABLE	EVENT
C	H2217	X R AUTO INTERRUPT RELAY	AP	3 1	S/S INTRPT	EVENT
C	H2660	V ROLL TOTAL ERROR AMP NULL	AP	3 1	S/S -2.5 +2.5	VDC
C	H3178	V 4KC CLOCK REF H1	AP	3 1	S/S 0	5 VP-P
C	H3179	A ACCEL TORQUER (ISOLATED REL)	AP	3 10	S/S -11 +11	VDC
C	H3217	X ECA D DV INTEGRATOR INHIBIT RLY	AP	3 1	S/S INHBT	EVENT
C	H3271	H PITCH GIMBAL POS IN	AP	3 50	S/S +7.0	-7.0 DEG
C	H3272	H YAW GIMBAL POS IN	AP	3 50	S/S +12.0	-4.0 DEG
C	H4323	X DV THRUST OFF MAN CONT	AP	3 1	S/S TH-OFF	EVENT
C	H4340	X AUTO DV CN/UUFF CMD	"	AP	3 1	DV-CGMD EVENT
C	H4602	X PHASE ROTATION 115V 400 CPS	AP	3 1	S/S ABC	ACB PHASE



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## SPACERCRAFT

SUBSYSTEM  
SERVICE PROPULSION

MEAS.	ID	MEASUREMENT DESCRIPTION	INFR	ACCESSIBILITY	MCPCF RESPONSE	DATA RANGE		LOCATION/REMARKS
						DISP	GSE SYRO	
S	P0030	X HE ISCLATION VLV 1		TP	1	10	S/S	OPEN CLOSE EVENT
S	PC031	X HE ISCLATION VLV 2		TP	1	10	S/S	OPEN CLOSE EVENT
S	P0662	X SERVICE ENG SCL VLV 1, 2 SIG MON		TP	3	1	S/S, DEF	ON EVENT
S	P0664	X SERVICE ENG SCL VLV 3, 4 SIG MON		TP	3	1	S/S	OFF ON EVENT
S	P0666	X SERVICE ENG SCL VLV 5 SIG MCN		TP	3	1	S/S	OFF ON EVENT
S	P0667	X SERVICE ENG SCL VLV 6 SIG MCN		TP	3	1	S/S	OFF ON EVENT
S	P3100	X FUEL TANK 1 PT SENSOR 1 TOP		TP	3	1	S/S	WET DRY EVENT
S	P3101	X FUEL TANK 1 PT SENSOR 2		TP	3	1	S/S	WET DRY EVENT
S	P3102	X FUEL TANK 1 PT SENSOR 3		TP	3	1	S/S	WET DRY EVENT
S	P3103	X FUEL TANK 1 PT SENSOR 4		TP	3	1	S/S	WET DRY EVENT
S	P3104	X FUEL TANK 1 PT SENSOR 5		TP	3	1	S/S	WET DRY EVENT
S	P3105	X FUEL TANK 1 PT SENSOR 6		TP	3	1	S/S	WET DRY EVENT
S	P3106	X FUEL TANK 1 PT SENSOR 7 BC10M		TP	3	1	S/S	WET DRY EVENT
S	P3107	X FUEL TANK 2 PT SENSOR 1 TUP		TP	3	1	S/S	WET DRY EVENT
S	P3108	X FUEL TANK 2 PT SENSOR 2		TP	3	1	S/S	WET DRY EVENT
S	P3109	X FUEL TANK 2 PT SENSOR 3		TP	3	1	S/S	WET DRY EVENT
S	P3110	X FUEL TANK 2 PT SENSOR 4		TP	3	1	S/S	WET DRY EVENT



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APJ11CC		A P C L L I C M / S M		B L O C K I		M E A S U R E M E N T _ _ L _ I S T					
SUBSYSTEM		SPACECRAFT		17							
SERVICF PROPULSION		MEASUREMENT DESCRIPTION		ACCESSIBILITY		MCPLF RESPONSE		DATA RANGE		LOCATION/REMARKS	
MEAS.	ID	MEASUREMENT	DESCRIPTION	TM/TR	DISP GST	SYRD		LOW	HIGH	UNITS	
S	P3111	X FUEL TANK 2	PT SENSOR 5	TP	3	1	S/S	WET	DRY	EVENT	
S	P3112	X FUEL TANK 2	PT SENSOR 6	TP	3	1	S/S	WET	DRY	EVENT	
S	P3113	X FUEL TANK 2	PT SENSOR 7	TP	3	1	S/S	WET	DRY	EVENT	
S	P3114	X FUEL TANK 2	PT SENSOR 8 HIGHUM	TP	3	1	S/S	WET	DRY	EVENT	
S	P3115	X UX TANK 1	PT SENSOR 1 TOP	TP	3	1	S/S	WET	DRY	EVENT	
S	P3116	X CX TANK 1	PT SENSOR 2	TP	3	1	S/S	WET	DRY	EVENT	
S	P3117	X UX TANK 1	PT SENSOR 3	TP	3	1	S/S	WET	DRY	EVENT	
S	P3118	X CX TANK 1	PT SENSOR 4	TP	3	1	S/S	WET	DRY	EVENT	
S	P3119	X CX TANK 1	PT SENSOR 5	TP	3	1	S/S	WET	DRY	EVENT	
S	P3120	X CX TANK 1	PT SENSOR 6	TP	3	1	S/S	WET	DRY	EVENT	
S	P3121	X CX TANK 1	PT SENSOR 7 BOTTOM	TP	3	1	S/S	WET	DRY	EVENT	
S	P3122	X UX TANK 2	PT SENSOR 1 TOP	TP	3	1	S/S	WET	DRY	EVENT	
S	P3123	X UX TANK 2	PT SENSOR 2	TP	3	1	S/S	WET	DRY	EVENT	
S	P3124	X CX TANK 2	PT SENSOR 3	TP	3	1	S/S	WET	DRY	EVENT	
S	P3125	X UX TANK 2	PT SENSOR 4	TP	3	1	S/S	WET	DRY	EVENT	
S	P3126	X CX TANK 2	PT SENSOR 5	TP	3	1	S/S	WET	DRY	EVENT	
S	P3127	X UX TANK 2	PT SENSOR 6	TP	3	1	S/S	WET	DRY	EVENT	



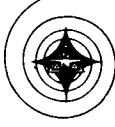
<u>Apollo CM / SM Block I Measurement List</u>							
<u>Subsystem</u>	<u>Spacecraft</u>						
<u>MEAS.</u>	<u>ID</u>	<u>Measurement Description</u>	<u>TM/IR Disp</u>	<u>Accessibility</u>	<u>MCPF Response</u>	<u>Data Range</u>	<u>Location/Remarks</u>
S	P3128	X OX TANK 2 PT SENSOR 7	DISP GSE SYRO	TP 3	1 S/S	LOW HIGH UNITS	YL-01 ACE
S	P3129	X OX TANK 2 PT SENSOR 8 BCTCM	DISP GSE SYRO	TP 3	1 S/S	WET DRY EVENT	PAGE NO. 23
S	P3152	H PRI VALVE SERVO OUTPUT	DISP GSE SYRO	TP 3	1 S/S	WET DRY EVENT	
S	P3153	H SEC VALVE SERVO OUTPUT	DISP GSE SYRO	TP 3	1 S/S	0 100 PCT	
S	P3158	Q AUX OX SERVO TLM OUTPUT	DISP GSE SYRO	TP 3	1 S/S	0 32K LB	
S	P3159	Q AUX FUEL SERVO TLM OUTPUT	DISP GSE SYRO	TP 3	1 S/S	0 16K LB	
S	P3161	Q PRI OX TANK 1 SERVO TLM CLIPUT	DISP GSE SYRO	TP 3	1 S/S	0 16K LB	
S	P3163	Q PRI FUEL TANK 1 SERVO TLM OUTPUT	DISP GSE SYRO	TP 3	1 S/S	0 8K LB	



APJ10C APOLLO CSM BLOCK I MEASUREMENT LIST		VL-01	
SUBSYSTEM	MEASUREMENT ID	DESCRIPTION	LOCATION/REMARKS
REACTION CONTROL	SPACEGRAFT	17	SEPT 19, 1966 PAGE NO. 24
MFAS.	ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY TM/TR DISP GSE
C R0248	X RCS TRANSFER SW A (S/M)	TP 3 1	MCPF RESPONSE SYRO
C R0249	X RCS TRANSFER SW B (S/M)	TP 3 1	DATA RANGE LOW HIGH UNITS
C R0250	X 42 SEC T0 RELAY C19A1K1 SYS A	TP 3 1	LOCATION/REMARKS
C R0251	X 42 SEC T0 RELAY C19A2K1 SYS B	TP 3 1	TRANS EVENT
C R0265	X 1H SEC T0 RELAY C19A1K12 SYS A	TP 3 10	TRANS EVENT
C R0267	X 1H SEC T0 RELAY C19A2K12 SYS B	TP 3 10	END EVENT
C R0268	X 18 SEC T0 RELAY C19A1K13 SYS A	TP 3 10	END EVENT
C R0269	X 15 SEC T0 RELAY C19A2K13 SYS B	TP 3 10	END EVENT
C R1020	X COMBINED PROP ISU VLV MCN SYS A	TP TP 1 1	END EVENT
C R1021	X COMBINED PROP ISU VLV MCN SYS B	TP TP 1 1	END EVENT
S R5C05	T HE TEMP TANK A	TP 3 1	OPEN CLOSE EVENT
S R5C06	T HE TEMP TANK B	TP 3 1	OPEN CLOSE EVENT
S R5C07	T HE TEMP TANK C	TP 3 1	OPEN CLOSE EVENT
S R5C08	T HE TEMP TANK D	TP 3 1	OPEN CLOSE EVENT
S R5050	X COMBINED PROP ISU VLV MCN SYS A	TP 1 1	OPEN CLOSE EVENT
S R5051	X COMBINED PROP ISU VLV MCN SYS B	TP 1 1	OPEN CLOSE EVENT
S R5052	X COMBINED PROP ISU VLV MCN SYS C	TP 1 1	OPEN CLOSE EVENT



MEAS.	ID	MEASUREMENT DESCRIPTION	TM/TR	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE		LOCATION/REMARKS
						DISP	GSF	
S R5103	X	COMBINED PRCP ISG VLV MGN SYS D	TB	TP	1	1	S/S	OPEN CLOSE EVENT
S R5101	X	HF ISOLATION VLV A1 POSITION	TB	TP	1	1	S/S	OPEN CLOSE EVENT
S R5102	X	HE ISOLATION VLV B1 POSITION	TB	TP	1	1	S/S	OPEN CLOSE EVENT
S R5103	X	HE ISOLATION VLV C1 POSITION	TB	TP	1	1	S/S	OPEN CLOSE EVENT
S R5104	X	HE ISOLATION VLV D1 POSITION	TB	TP	1	1	S/S	OPEN CLOSE EVENT
S R5105	X	HE ISOLATION VLV A2 POSITION	TB	TP	1	1	S/S	OPEN CLOSE EVENT
S R5106	X	HE ISOLATION VLV B2 POSITION	TB	TP	1	1	S/S	OPEN CLOSE EVENT
S R5107	X	HE ISOLATION VLV C2 POSITION	TB	TP	1	1	S/S	OPEN CLOSE EVENT
S R5108	X	HE ISOLATION VLV D2 POSITION	TB	TP	1	1	S/S	OPEN CLOSE EVENT



APJ110C APP LLO CM / S# BLOCK I MEASUREMENT LIST VL-01

SUBSYSTEM COMMUNICATIONS AND INSTRUMENTATION

SPACECRAFT 17

SEPT 19, 1966  
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## MEASUREMENT DESCRIPTION

## MEAS. ID ACCESSIBILITY DATA RANGE LOCATION/REMARKS

MEAS. ID	MEASUREMENT DESCRIPTION	TM/TR	DISP GSE SYRO	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
C T0010 T TEMP SIGNAL CONDITIONER PACKAGE		AP	3 1	S/S	+32 +250 DEG F	
C T0060 V TV VIDEO OUTPUT		USM	3			
C T0065 T TEMP VHF/FM XMTR		AP	3 1	S/S	+32 +250 DEG E	ON EVENT
C T0078 X C-BAND XPCNDR PS +10V		AP	3 10	S/S		
C T0C96 T TEMP C-BAND XPCNDR (OUT STAGE)		AP	3 1	S/S	+32 +250 DEG F	
C T0179 T TEMP S-BAND XPCNDR (OUTPUT)		AP	3 1	S/S	+32 +250 DEG F	
C T0194 T VHF/AM XMTR TEMP		AP	3 1	S/S	+32 +250 DEG F	
C T0216 T S-BAND PWR AMPLIFIER TEMP		AP	3 1	S/S	+32 +250 DEG F	
C T0245 V UDL NORMALIZED POWER		AP	3 1	S/S	0 +6.4 VDC	
C T0258 V PMP 70 KC DISCRIMINATOR OUTPUT		AP	3 1	S/S	0 1.5 VRMS	
C T0325 V VHF/AM XMTR FINAL AMP GRID VOLT		AP	3 1	S/S		
C T0326 T TEMP VHF RECOVRY BEACON		AP	3 1	S/S	+32 +248 DEG F	
C T0333 T TEMP HF PA MODULE		AP	3 1	S/S	+32 +248 DEG F	
C T0379 V SUBCARRIER REFERENCE (512KC)		USM	3			
C T0380 V DATA RATE TIMING		USM	3			
C T0382 V SUB FRAME RATE TIMING (1PPS)		USM	3			
C T0383 V RZ SERIAL DATA		USM	3			



APJ110C      A P C L L C    C M L S M    B L O C K I    M E A S U R E M E N T   L I S T      VL-01

SUBSYSTEM      COMMUNICATIONS AND INSTRUMENTATION      SPACECRAFT      17      SEPT 19, 1966      ACE

MEAS. ID      MEASUREMENT DESCRIPTION      ACCESSIBILITY      MCPF RESPONSE      DATA RANGE      LOCATION/REMARKS

MEAS. ID	MEASUREMENT DESCRIPTION	ACCESSIBILITY	MCPF RESPONSE	DATA RANGE	LOCATION/REMARKS
C T0384	V INTERCOM-TWISTED SHLDED PAIR	USM	3	S/S	0 - 1.0 VDC
C T1201	V PMP 1.25 NC SCO CJPUT	AP	3	1	S/S
C T1227	V PMP UP-VOICE DISCRIMINATOR OUT	AP	3	1	S/S      0 - 1.25 VRMS



## IX. CHANNEL ASSIGNMENT

The channel assignment lists for the PCM channel assignment may be obtained in Specifications MA0505-0013 for Spacecraft and 020. The following list is an excerpt from that specification dated 15 August 1966.



## PCM TELEMETRY AND FLIGHT QUALIFICATION TAPE RECORDER CHANNEL ASSIGNMENT LIST CODING GUIDE

Nomenclature used in the first four columns of each list—measurement identification (MEAS ID), measurement description, accessibility, and response—is identical to that of the measurement requirement list. The following columns are used to present PCM channel or flight qualification tape recorder assignment data.

CHANNEL NUMBER  $\begin{pmatrix} \text{CH} \\ \text{NO} \end{pmatrix}$

The telemetry channel number denotes the telemetry channel to which the measurement has been assigned. A flight qualification measurement that is assigned to be recorded on the flight qualification tape recorder is denoted by the letter F followed by a dash and the tape track number, e.g., F-1. The commutator outputs, high or low level, are first mixed and then recorded on recorder tracks with an asterisk following the recorder track number. The commutator channels are identified by the commutator number, type, and the segment number (e.g. 2H15 reads: number 2 high level commutator segment No. 1S).

CHANNEL RESPONSE  $\begin{pmatrix} \text{CH} \\ \text{S/S} \end{pmatrix}$

Channel response is indicated in samples per second.

TYPE OF CHANNEL  $\begin{pmatrix} \text{T} \\ \text{Y} \end{pmatrix}$

The following codes indicate the types of channels.

- H High-level analog
- L Low-level analog
- D Digital, parallel
- S Digital, serial
- E Event
- I Frame synchronization and ID

FORMAT  $(\frac{F}{O})$ 

Format data rate is indicated as follows:

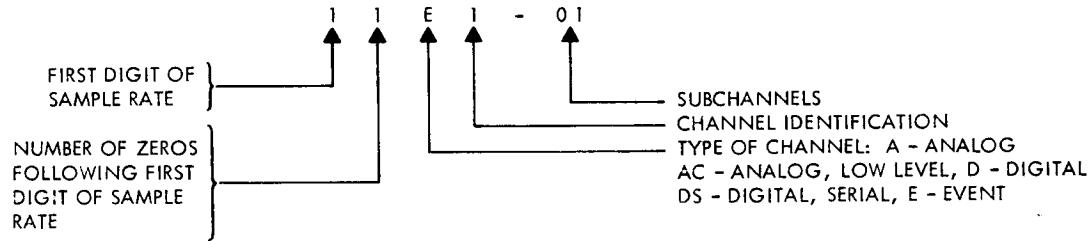
1. Normal rate (51.2 kilobits per second)
2. Normal and minimal (51.2 and 1.6 kilobits per second)

## PLUG AND PIN

The plug and pin designation denotes the telemetry plug, signal pin, and shield or return pin. (For twisted pair input channels, two signal pins are given followed by the shield or return pin.) A G indicates return connections.

## CHANNEL CODE

The channel code number indicates the response, type, and number of each channel. The following sketch depicts a channel code.





## PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

## STRUCTURES

SC17.20

AUGUST 15, 1966

MEAS ID	MCAS SURVEY POINT DESCRIPTION	RESPONSE RATE UNIT NO	CH S/S	TF Y/O	PLUG AND PIN	CHANNEL CODE
CA0151A	X AXIS ENTRY ACCEL HIGH	100 S/S	11	100	H1	P134-11-241
CA0152A	Y AXIS ENTRY ACCEL HIGH	100 S/S	12	100	H1	P134-12-241
CA0153A	Z AXIS ENTRY ACCEL HIGH	100 S/S	13	100	H1	P134-13-241
CA1502T	TEMP SIDE HS BUND LOC A	PCM	1	S/S	174	1
CA1503T	TEMP SIDE HS BUND LOC B	PCM	1	S/S	200	1
CA1504T	TEMP SIDE HS BUND LOC C	PCM	1	S/S	178	1
SA2360UT	TEMP SEXT 3 IN SURF	PCM	1	S/S	202	1
SA2361UT	TEMP SEXT 6 IN SURF	PCM	1	S/S	180	1
SA2364T	TEMP SEXT 3 FUEL TANK SURF	PCM	1	S/S	215	1
SA2365T	TEMP SEXT 6 FUEL TANK SURF	PCM	1	S/S	182	1
SA2366T	TEMP SEXT 4 IN SURF	PCM	1	S/S	184	1
SA2367T	TEMP SEXT 1 IN SURF	PCM	1	S/S	185	1
CA5810T	TEMP ASTRO-SEXT AREA/STL LCC 1	PCM	1	S/S	286	1
CA5811T	TEMP ASTRO-SEXT AREA/STL LCC 2	PCM	1	S/S	287	1
CA5812T	TEMP ASTRO-SE XT AREA/STL LCC 2	PCM	1	S/S	286	1
CA5813T	TEMP ASTRO-SE XT AREA/AL LCC 1	PCM	1	S/S	296	1
CA5814T	TEMP ASTRO-SE XT AREA/AL LCC 2	PCM	1	S/S	297	1
CA5815T	TEMP ASTRO-SE XT AREA/AL LCC 3	PCM	1	S/S	298	1
CA5816T	TEMP ASTRO-SE XT AREA/AL LCC 4	PCM	1	S/S	299	1
CA5817T	TEMP ASTRO-SE XT AREA/AL LCC 5	PCM	1	S/S	300	1
CA5818T	TEMP ASTRO-SE XT AREA/AL LCC 6	PCM	1	S/S	277	1
CA7822T	TEMP LH SIDE WINDOW IN FRAME				L1	P132-95-97-96-1CAL7

## PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

## ELECTRICAL POWER SYSTEMS

AUGUST 15, 1966

MEAS ID	MEASUREMENT DESCRIPTION	SC17+20	RESPONSE RATE UNIT NO	CH NO	TF S/S	PLUG AND PIN	CHANNEL CODE #
CC0175T	TEMP STATIC INVERTER 1	PCM+	1 S/S	179	1 H2	P134-175-241	10A9
CC0176T	TEMP STATIC INVERTER 2	PCM+	1 S/S	181	1 H2	P134-181-241	10A11
CC0177T	TEMP STATIC INVERTER 3	PCM+	1 S/S	183	1 H2	P134-183-241	10A13
CC0178T	TEMP BATTERY A CASE	PCM+	1 S/S	186	1 H2	P134-186-241	1CA16
CC0179T	TEMP BATTERY B CASE	PCM+	1 S/S	187	1 H2	P134-187-241	10A17
CC0180P	PRESS DATT COMPARTMENT (MANIF)	PCM	10 S/S	48	10 H1	P134-48-241	11A3
CC0181V	DC VOLTAGE MAIN BATT 1	PCM	10 S/S	105	10 H1	P134-105-241	11A60
CC0182V	DC VOLTAGE MAIN BATT 2	PCM	10 S/S	106	10 H1	P134-106-241	11A61
CC0183V	DC VOLTAGE MAIN BATT 3	PCM	10 S/S	112	10 H1	P134-112-241	11A67
CC0200V	AC VOLTAGE MAIN BUS 1 PHASE A	PCM	10 S/S	46	10 H2	P134-46-241	11A1
CC0201V	AC VOLTAGE MAIN BUS 1 PHASE B	PCM	10 S/S	50	10 H1	P134-50-241	11A5
CC0202V	AC VOLTAGE MAIN BUS 1 PHASE C	PCM	10 S/S	52	10 H1	P134-53-241	11A8
CC0203V	AC VOLTAGE MAIN BUS 2 PHASE A	PCM	10 S/S	47	10 H2	P134-47-241	11A2
CC0204V	AC VOLTAGE MAIN BUS 2 PHASE B	PCM	10 S/S	54	10 H1	P134-54-241	11A9
CC0205V	AC VOLTAGE MAIN BUS 2 PHASE C	PCM	10 S/S	55	10 H1	P134-55-241	11A10
CC0206V	DC VOLTAGE MAIN BUS A	PCM	10 S/S	49	10 H2	P134-49-241	11A4
CC0207V	DC VOLTAGE MAIN BUS B	PCM	10 S/S	51	10 H2	P134-51-241	11A6
CC0210V	DC VOLTAGE BATTERY BUS A	PCM	10 S/S	56	10 H1	P134-56-241	11A11
CC0211V	DC VOLTAGE BATTERY BUS B	PCM	10 S/S	57	10 H1	P134-57-241	11A12
CC0212V	DC VOLTAGE POST LANDING BATTERY	PCM	10 S/S	60	10 H1	P134-60-241	11A15
CC0213F	FREQUENCY AC BUS 1 PHASE A	PCM	1 S/S	188	1 H1	P134-188-241	10A18
CC0214V	DC VOLTAGE BATT CHARGER OUT	PCM	10 S/S	62	10 H1	P134-62-241	11A17
CC0215C	DC CURRENT BATT CHARGER CUT	PCM	10 S/S	52	10 H2	P134-52-241	11A7
CC0217F	DC CURRENT AC BUS 2 PHASE A	PCM	1 S/S	190	1 H1	P134-190-241	10A20
CC0222C	DC CURRENT BATTERY A	PCM	10 S/S	66	10 H1	P134-66-241	11A21
CC0223C	DC CURRENT BATTERY B	PCM	10 S/S	67	10 H1	P134-67-241	11A22
CC0224C	DC CURRENT POST LANDING BATTERY	PCM	10 S/S	68	10 H1	P134-68-241	11A23
CC0227V	DC VOLTAGE PMU BATT A	PCM	10 S/S	64	10 H1	P134-64-241	11A19
CC0228V	DC VOLTAGE PMU BATT B	PCM	10 S/S	153	10 H1	P134-153-241	11A108
CC0232V	DC VOLTAGE BATTERY RELAY BUS	PCM	10 S/S	59	10 H2	P134-59-241	11A14
CC0451X	ESSENTIAL AC LOAD TRANSFER	PCPE	10 S/S	328-08	10 E2	P71-51-G	11E5-08
SC2060P	N2 PRESSURE F/C 1 REGULATED	PCM	1 S/S	192	1 H1	P134-192-241	10A22
SC2061P	N2 PRESSURE F/C 2 REGULATED	PCM	1 S/S	194	1 H1	P134-194-241	10A24
SC2062P	N2 PRESSURE F/C 3 REGULATED	PCM	1 S/S	195	1 H1	P134-195-241	10A25

ELECTRICAL POWER SYSTEMS  
MEASUREMENT  
ID

PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

SC17-20

AUGUST 15, 1966

MEAS ID	DESCRIPTION	MEASUREMENT	RATE UNIT NO	RESPONSE CH	CH S/S	IF YO	PLUG AND PIN	CHANNEL CCDE
SC2066P	02 PRESSURE F/C 1 REGULATED	PCM	10 S/S	69	10	H1	P134-69 -241	11A24
SC2067P	02 PRESSURE F/L 2 REGULATED	PCM	10 S/S	70	10	H1	P134-70 -241	11A25
SC2068P	02 PRESSURE F/C 3 REGULATED	PCM	10 S/S	73	10	H1	P134-73 -241	11A26
SC2069P	H2 PRESSURE F/C 1 REGULATED	PCM	10 S/S	75	10	H1	P134-75 -241	11A28
SC2070P	H2 PRESSURE F/C 2 REGULATED	PCM	10 S/S	76	10	H1	P134-78 -241	11A29
SC2071P	H2 PRESSURE F/C 3 REGULATED	PCM	10 S/S	79	10	H1	P134-79 -241	11A34
SC2081T	TEMP F/C 1 CND EXHAUST	PCM+	1 S/S	171	1	H2	P134-171-241	10A1
SC2082T	TEMP F/C 2 CND EXHAUST	PCM+	1 S/S	173	1	H2	P134-173-241	10A3
SC2083T	TEMP F/C 3 CND EXHAUST	PCM+	1 S/S	176	1	H2	P134-176-241	10A6
SC2084T	TEMP F/C 1 SKIN	PCM+	1 S/S	189	1	H2	P134-189-241	10A19
SC2085T	TEMP F/C 2 SKIN	PCM+	1 S/S	191	1	H2	P134-191-241	10A21
SC2086T	TEMP F/C 3 SKIN	PCM+	1 S/S	193	1	H2	P134-193-241	10A23
SC2087T	TEMP FC 1 RADIATOR OUTLET	PCM+	1 S/S	196	1	H2	P134-196-241	10A26
SC2088T	TEMP FC 2 RADIATOR OUTLET	PCM+	1 S/S	197	1	H2	P134-197-241	10A27
SC2089T	TEMP FC 3 RADIATOR OUTLET	PCM+	1 S/S	199	1	H2	P134-199-241	10A29
SC2113C	DC CURRENT F/C 1 OUTPUT	PCM+	10 S/S	61	1C	H2	P134-61 -241	11A16
SC2114C	DC CURRENT F/C 2 OUTPUT	PCM+	10 S/S	63	10	H2	P134-63 -241	11A18
SC2115C	DC CURRENT F/C 3 OUTPUT	PCM+	10 S/S	65	10	H2	P134-65 -241	11A20
SC2120X	FUEL CELL 1 BUS A DISCONNECT	PCME	10 S/S	333-01	1C	E2	P71 -34 -6	11E10 -01
SC2121X	FUEL CELL 2 BUS A DISCONNECT	PCME	10 S/S	333-02	10	E2	P71 -35 -6	11E10 -02
SC2122X	FUEL CELL 3 BUS A DISCONNECT	PCME	10 S/S	333-03	10	E2	P71 -37 -6	11E10 -03
SC2125X	FUEL CELL 1 BUS B DISCONNECT	PCME	10 S/S	333-04	10	E2	P71 -38 -6	11E10 -04
SC2126X	FUEL CELL 2 BUS B DISCONNECT	PCME	10 S/S	333-05	10	E2	P71 -65 -6	11E10 -05
SC2127X	FUEL CELL 3 BUS B DISCONNECT	PCME	10 S/S	333-06	10	E2	P71 -70 -6	11E10 -06
SC2139R	FLOW RATE H2 F/C 1	PCM	10 S/S	80	10	H1	P134-80 -241	11A35
SC2140R	FLOW RATE H2 F/C 2	PCM	10 S/S	81	10	H1	P134-81 -241	11A36
SC2141R	FLOW RATE H2 F/C 3	PCM	10 S/S	82	10	H1	P134-82 -241	11A37
SC2142R	FLOW RATE O2 F/L 1	PCM	10 S/S	85	10	H1	P134-85 -241	11A40
SC2143R	FLOW RATE O2 F/C 2	PCM	10 S/S	87	10	H1	P134-87 -241	11A42
SC2144R	FLOW RATE O2 F/C 3	PCM	10 S/S	89	10	H1	P134-89 -241	11A44
SC2190X	PH FACT H2O COND FC 1	PCM	10 S/S	351-05	10	E2	P71 -241 -6	11E28 -05
SC2161X	PH FAULT H2O COND FC 1	PCM	10 S/S	351-06	10	E2	P71 -242 -6	11E28 -06
SC2162X	PH FACT H2O COND FC 1	PCM	10 S/S	351-07	10	E2	P71 -243 -6	11E28 -07
SC2323X	FUEL CELL 1 SHUT OFF MON	PCME	10 S/S	333-07	10	E2	P71 -71 -6	11E10 -07
SC2324X	FUEL CELL 2 SHUT OFF MON	PCME	10 S/S	333-08	10	E2	P71 -72 -6	11E10 -08



## PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

SC17,20

ELECTRICAL POWER SYSTEMS

AUGUST 15, 1966

MEAS ID	MEASUREMENT DESCRIPTION	PCM	RESPONSE CH RATE UNIT NO	CH S/S	IF YO	PLUG AND PIN	CHANNEL CODE	CHANNEL ID
SC2325X	FUEL CELL 3 SHUT OFF MUN	10	S/S	334-01	10	E2	P71-73-G	11E11-01

## PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

## LAUNCH ESCAPE SYSTEMS

SC17-20 AUGUST 15, 1966

MEAS ID	DESCRIPTION
C00002X	LÉS ABORT INITIATE SIGNAL A
C00003V	DC VOLTAGE PYRO BUS A
C00004V	DC VOLTAGE PYRO BUS B
C00023X	CM-SM SEP RELAY CLOSE A
C00024X	CM-SM SEP RELAY CLOSE B
C00037X	ELS SW START RLY CLOSE A
C00038X	ELS SW START RLY CLOSE B
C00044X	BOoster CUT-OFF SIG A
C00045X	BOoster CUT-OFF SIG B
C00062X	LÉS ABORT INITIATE SIGNAL B
C00105X	TWK JETTISON A
C00106X	TWK JETTISON B
C00120X	CANARD DEPLOY A
-C00121X	CANARD DEPLOY B
C00125X	AUAP T/SM SEP INITIATE A
C00126X	AUAP T/SM SEP INITIATE B
C00127X	AUAP T SEPAKA TUN A
C00128X	AUAP T SEPAKA TUN B
C00130X	HANU CONTROLLER INPUT A
C00131X	HANU CONTROLLER INPUT B
C00132V	EDS ABORT LOGIC IN NO 1
C00133V	EDS ABORT LOGIC IN NO 2
C00134V	EDS ABORT LOGIC IN NO 3
C00135X	EDS ABORT LOGIC OUT A
C00136X	EDS ABORT LOGIC OUT B
C00140X	DIRECT ULLAGE UN A
C00141X	DIRECT ULLAGE UN B
C00170X	RCS ACTIVATE SIG A
C00171X	RCS ACTIVATE SIG B
C00173X	CM RCS PRESS SIG A
C00174X	CM RCS PRESS SIG B
C00200V	DC VOLTAGE LOGIC BUS A
C00201V	DC VOLTAGE LOGIC BUS B
C00230X	FWD MS JETTISON A

MEAS ID	DESCRIPTION	RESPONSE CH	CH	TF	PLUG AND	CHANNEL
		RATE UNIT NO	S/S	YO	PIN	CCDE
PCME		10	S/S	335-01	10	E2
PCME		10	S/S	51	10	P71 -78 -6
PCME		10	S/S	92	10	H1 P134-91 -241
PCME		10	S/S	335-02	10	E2 P71 -80 -6
PCME		10	S/S	335-04	1C	E2 P71 -81 -6
PCME		10	S/S	343-04	10	E2 P71 -77 -6
PCME		10	S/S	343-01	10	E2 P71 -142-6
PCME		10	S/S	335-08	10	E2 P71 -131-6
PCME		10	S/S	346-04	10	E2 P71 -223-6
PCME		10	S/S	335-07	10	E2 P71 -114-6
PCME		10	S/S	351-02	10	E2 P71 -203-6
PCME		10	S/S	351-03	10	E2 P71 -204-6
PCME		10	S/S	338-05	1C	E2 P71 -123-6
PCME		10	S/S	339-07	1C	E2 P71 -130-6
PCME		10	S/S	236-01	10	E2 P71 -82 -6
PCME		10	S/S	336-02	10	E2 P71 -83 -6
PCME		10	S/S	335-02	10	E2 P71 -79 -6
PCME		10	S/S	334-02	10	E2 P71 -74 -6
PCME		10	S/S	343-03	10	E2 P71 -144-6
PCME		10	S/S	338-06	10	E2 P71 -124-6
PCME		10	S/S	339-02	10	E2 P71 -95-6
PCME		10	S/S	339-03	10	E2 P71 -96-6
PCME		10	S/S	345-07	1C	E2 P71 -23-6-6
PCME		10	S/S	350-05	10	E2 P71 -202-6
PCME		10	S/S	335-06	10	E2 P71 -112-6
PCME		10	S/S	335-08	10	E2 P71 -115-6
PCME		10	S/S	336-06	10	E2 P71 -117-6
PCME		10	S/S	336-07	10	E2 P71 -118-6
PCME		10	S/S	336-08	10	E2 P71 -119-6
PCME		10	S/S	337-01	10	E2 P71 -87 -6
PCME		10	S/S	95	10	H1 P134-95 -241
PCME		10	S/S	98	10	H1 P134-98 -241
PCME		10	S/S	334-03	10	E2 P71 -76 -6

MEAS ID	DESCRIPTION	RESPONSE CH	CH	TF	PLUG AND	CHANNEL
		RATE UNIT NO	S/S	YO	PIN	CCDE



## PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

## LAUNCH ESCAPE SYSTEMS

SC17,20 AUGUST 15, 1966

MEAS ID	MEASUREMENT DESCRIPTION	PCME	RESPONSE CH RATE UNIT NO	CH S/S	IF YO PIN	PLUG AND CHANNEL CCDE
CU0231X FWD HS JETTISON B		PCME	10 S/S	350-08 10	E2	P71-240-G 11E27 -08
CU0315X EDS ENABLE A		PCME	10 S/S	346-02 10	E2	P71-189-G 11E23 -02
CU0316X EDS ENABLE B		PCME	10 S/S	334-06 10	E2	P71-108-G 11E11 -06
CD1006X LES MOTOR INITIATE A		PCME	10 S/S	334-07 10	E2	P71-109G 11E11-07
CD1007X LES MOTOR INITIATE B		PCME	10 S/S	343-02 10	E2	P71-143G 11E20-02



## EARTH LANDING SYSTEM

PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

SC17-26 AUGUST 15, 1966

MEAS ID	MEASUREMENT DESCRIPTION	RESPONSE RATE UNIT NO			CH S/S YU PIN			PLUG AND CHANNEL CODE		
		CH	S/S	YU	E2	P71	-112G-G	11E14	-04	
CLO001X	DRUGUE DEPLAY RELAY CLOSE A	PCME	10	S/S	337-04	10	E2	P71	-112G-G	11E14
CLO002X	DRUGUE DEPLAY RELAY CLOSE B	PCME	10	S/S	337-05	10	E2	P71	-112G-G	11E14
CE0003X	MAIN CHUTE DEPL-URG REL RELY A	PCME	10	S/S	337-06	10	E2	P71	-1153-G	11E14
CE0004X	MAIN CHUTE DEPL-ORG REL RELY B	PCME	10	S/S	337-07	10	E2	P71	-1154-G	11E14
CE0007X	BARD SW LUCK-IN RELY CLOSE A	PCME	10	S/S	337-08	10	E2	P71	-1155-G	11E14
CE0008X	BARD SW LUCK-IN RELY CLOSE B	PCME	10	S/S	338-01	10	E2	P71	-1150-G	11E15
CE0035P	BARDMETRIC PRESS STATIC REF	PCP	1	S/S	210	1	H1	P134-210-241	10440	
CE0321X	MAIN CHUTE DISCONNECT RELAY A	PCME	10	S/S	338-02	10	E2	P71	-91-G	11E15
CE0322X	MAIN CHUTE DISCONNECT RELAY B	PCME	10	S/S	338-03	10	E2	P71	-93-G	11E15
										-03

## PCM CHANNEL ASSIGNMENTS BY MEASUREMENT 10

ENVIRONMENTAL CONTROL SYSTEMS  
MEASUREMENT  
ID  
DESCRIPTION

AUGUST 15, 1966

SC17-2U  
PCM CHANNEL ASSIGNMENTS BY MEASUREMENT 10  
CHANNEL  
CCDE

	MEAS ID	MEASUREMENT DESCRIPTION	RESPONSE RATE UNIT NO	CH S/S	TF S/S	PLUG AND PIN	CHANNEL CCDE
	CF0002T	PRESSURE CABIN	PCM+	1	S/S	201	10A31
	CF0002P	PRESS SURGE TANK	PCM+	1	S/S	203	10A33
	CF0002W	QUANTITY WASTE WATER TANK	PCM+	1	S/S	212	10A42
	CF0010W	QUAN PUTABLE H2O TANK	PCM+	1	S/S	177	10A7
	CF0010P	PRESS GLYCUL PUMP OUTLET	PCM+	1	S/S	246	10A76
	CF0017T	TEMP GLYCUL EVAP OUTLET STEAM	PCM+	1	S/S	256	10A86
	CF0018T	TEMP GLYCUL EVAP OUTLET LIQUID	PCM+	1	S/S	224	10A54
	CF0019Q	QUANTITY GLYCOL ACCUM	PCM+	1	S/S	257	10A87
	SF0030Q	QUANTITY H2 TANK 1	PCM+	1	S/S	239	10A69
	SF0031W	QUANTITY H2 TANK 2	PCM+	1	S/S	211	10A41
	SF0032W	QUANTITY U2 TANK 1	PCM+	1	S/S	213	10A43
	SF0033W	QUANTITY U2 TANK 2	PCM+	1	S/S	216	10A46
	SF0034P	GLYCUL EVAP BACK PRESSURE SENSING	PCM+	10	S/S	217	10A47
	CF0035K	FLWKATE ECS U2	PCM+	1	S/S	108	11A63
	CF0036P	PRESS OUTLET U2 REG SUPPLY	PCM	1	S/S	219	10A49
	SF0037P	PRESS U2 TANK 1	PCM+	1	S/S	230	10A60
	SF0038P	PRESS U2 TANK 2	PCM+	1	S/S	221	10A51
	SF0039P	PRESS H2 TANK 1	PCM+	1	S/S	223	10A53
	SF0040P	PRESS H2 TANK 2	PCM+	1	S/S	226	10A56
	SF0041T	TEMP U2 TANK 1	PCM+	1	S/S	227	10A57
	SF0042T	TEMP U2 TANK 2	PCM+	1	S/S	229	10A59
	SF0043T	TEMP H2 TANK 1	PCM+	1	S/S	231	10A61
	SF0044T	TEMP H2 TANK 2	PCM+	1	S/S	233	10A63
	CF0245T	TEMP U2 REG IN	PCM	1	S/S	236	10A66
	CF04d1T	TEMP CP BRANCH 1 IN	PCM	1	S/S	228	10A58
	CF0482T	TEMP CP BRANCH 1 OUT	PCM	1	S/S	5	12A1
	CF0483T	TEMP CP BRANCH 2 IN	PCM	1	S/S	6	12A2
	CF0484T	TEMP CP BRANCH 2 OUT	PCM	1	S/S	7	12A3
	CF0549P	DIFF PRESS CULULATE DR 1	PCM	1	S/S	245	10A75
	CF0550P	DIFF PRESS CULULATE DR 2	PCM	1	S/S	238	10A68
				10	S/S	109	11A64

## GUIDANCE AND NAVIGATION SYSTEM

SC17-20

AUGUST 15, 1966

MEASUREMENT  
ID  
DESCRIPTION

MEAS ID	DESCRIPTION	RESPONSE RATE UNIT NO	CH NO	TF S/S	PLUG AND PIN	CHANNEL CODE
CG0001V	COMPUTER DIGITAL DATA 40 BITS	PCPD	50	S/S	322	50 S2 P73 -5 -43 -6
CG101V	-2E VDC SUPPLY	PCM+	1	S/S	102	5105 H2 P134-102-241
CG1410V	2.5 VDC TRIM	PCM+	1	S/S	267	11A57 H2 P134-27 -31
CG1503X	IMU +26 VDC OPERATE	PCM	10	S/S	340-0 1	10A97 H2 P71 -99 -6
CG1513X	IMU +26 VDC STANDBY	PCM	10	S/S	340-0 2	11E17 -01 H2 P71 -10G-6
CG1523X	AGC +26 VDC	PCM	10	S/S	340-0 3	11E17 -02 H2 P71 -102-G
CG1533X	OPTIX +26 VDC	PCM	10	S/S	340-0 4	11E17 -03 H2 P71 -103-G
CG2110V	IGA TURQUE MOTOR INPUT	FCP	10	S/S	71	11A26 H2 P134-71 -241
CG2112V	IGA IX RES OUTPUT SINE IN PHASE	FCP	10	S/S	118	11A73 H1 P134-118-241
CG2113V	IGA IX RES OUTPUT COS IN PHASE	FCP	10	S/S	119	11A74 H1 P134-119-241
CG2117V	IGA SERVO ERROR IN PHASE	FCP	100	S/S	8	100 H1 P134-6 -241
CG2140V	MGA TURQUE MOTOR INPUT	FCP	10	S/S	72	10 H2 P134-72 -241
CG2142V	MGA IX RES OUTPUT SINE IN PHASE	FCP	10	S/S	120	10 H1 P134-120-241
CG2143V	MGA IX RES OUTPUT COS IN PHASE	FCP	10	S/S	58	10 H2 P134-58 -241
CG2147V	MGA SERVO ERROR IN PHASE	FCP	100	S/S	9	100 H1 P134-9 -241
CG2170V	UGA TURQUE MOTOR INPUT	FCP	10	S/S	74	10 H2 P134-74 -241
CG2172V	UGA IX RES OUTPUT SINE IN PHASE	FCP	10	S/S	125	10 H1 P134-125-241
CG2173V	UGA IX RES OUTPUT COS IN PHASE	FCP	10	S/S	128	10 H1 P134-128-241
CG2177V	UGA SERVO ERROR IN PHASE	FCP	100	S/S	10	100 H1 P134-10 -241
CG2206V	IGA COU IX RES ERROR IN PHASE	FCP	10	S/S	129	10 H1 P134-129-241
CG2236V	MGA COU IX RES ERROR IN PHASE	FCP	10	S/S	168	10 H1 P134-168-241
CG2266V	UGA COU IX RES ERROR IN PHASE	FCP	10	S/S	169	10 H1 P134-169-241
CG2300T	PIPA TEMP	PCM+	1	S/S	237	11A124 H2 P134-237-241
CG2301T	IRIG TEMP	PCM+	1	S/S	249	10A67 H2 P134-128-241
CG2302C	IMU HEATER CURRENT	PCM+	1	S/S	241	10A79 H2 P136-9 -31
CG2303C	IMU DRIVER CURRENT	PCM+	1	S/S	243	10A73 H2 P136-3 -31
CG3104V	SXT TRUN MOA INPUT IN PH	PCM	10	S/S	132	10 H1 P134-132-241
CG3105V	SXT TRUN TACH F/B IN PH	PCM	10	S/S	130	11A85 H1 P134-130-241
CG3114V	SXT SHAFT MOA INPUT IN PH	PCM	10	S/S	135	11A90 H1 P134-135-241
CG3115V	SXT SHAFT TACH F/B IN PHASE	PCM	10	S/S	131	11A86 H1 P134-131-241
CG3141V	TRUN CDU 16X RES ERROR IN PH	PCM	10	S/S	141	10 H1 P134-141-241
CG3211V	SAT SHIFT 16X RES ERROR IN PH	PCM	10	S/S	137	10 H1 P134-137-241
CG4300T	AGC TEMP MONITOR	PCM	1	S/S	250	10A92 H1 P136-10 -31
CG5000X	PIPA FAIL	PCPE	10	S/S	340-0 5	10A80 H2 P71 -132-G
						11E17 -05

## GUIDANCE AND NAVIGATION SYSTEM

PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

SCI7,20

AUGUST 15, 1966

MEASUREMENT  
ID

MEASUREMENT ID	DESCRIPTION	RESPONSE RATE UNIT	CH NU	CH S/S	TF YO	PLUG AND PIN	CHANNEL CODE	
C65001X	IMU FAIL	PCME	10	S/S	340-06	10	E2	P71 -133-G
C65002X	CDU FAIL	PCME	10	S/S	340-07	1C	E2	P71 -134-G
C65003X	GIMBAL LUCK WARNING	PCME	10	S/S	340-08	10	E2	P71 -135-G
C65004X	ERROR DETECT	PCME	10	S/S	341-02	10	E2	P71 -105-G
C65006X	IMU TEMP LIGHT	PCME	10	S/S	341-03	10	E2	P71 -106-G
C65007X	ZERO ENCODER LIGHT	PCME	10	S/S	341-04	1C	E2	P71 -136-G
C65008X	IMU DELAY LIGHT	PCME	10	S/S	341-07	10	E2	P71 -171-G
C65020X	AGC ALARM 1 (PROGRAM)	PCME	10	S/S	341-06	1C	E2	P71 -17-G
C65021X	AGC ALARM 2 (AGC ACTIVITY)	PCME	10	S/S	341-05	1C	E2	P71 -138-G
C65022X	AGC ALARM 3 (T/F)	PCME	10	S/S	341-08	10	E2	P71 -172-G
C65023X	AGC ALARM 4 (PRUG CK FAIL)	PCME	10	S/S	342-01	10	E2	P71 -139-G
C65024X	AGC ALARM 5 (SCALAK FAIL)	PCME	10	S/S	342-02	10	E2	P71 -140-G
C65025X	AGC ALARM 6 (PARITY FAIL)	PCME	10	S/S	342-03	10	E2	P71 -141-G
C65026X	AGC ALARM 7 (COUNTERK FAIL)	PCME	10	S/S	342-04	10	E2	P71 -173-G
C65027X	AGC ALARM 8 (KEY RELEASE SE)	PCME	10	S/S	342-05	10	E2	P71 -175-G
C65028X	AGC ALARM 9 (RUPT LUCK)	PCME	10	S/S	342-06	10	E2	P71 -207-G
C65029X	AGC ALARM 10 (TC TRAP)	PCME	10	S/S	342-07	1C	E2	P71 -208-G
C65030A	COMPUTER POWER FAIL LIGHT	PCME	10	S/S	342-08	10	E2	P71 -209-G
C66000P	IMU PRESSURE	PCP	1	S/S	220	1	H1	P134-220-241
C66020T	PSA TEMP 1 TRAY 3	PCP	1	S/S	240	1	H1	P134-240-241
C66021T	PSA TEMP 2 TRAY 2	PCP	1	S/S	242	1	H1	P136-2-31
C66022T	PSA TEMP 3 TRAY 4	FCN	1	S/S	244	1	H1	P136-4-31



## STABILIZATION CONTROL SYS...

PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

SC17.20 AUGUST 15, 1966

MEAS ID	MEAS SUBLMN DESCRIPTION	RESPONSE CH RATE UNIT NO	CH S/S	WF YU PIN	PLUG AND PIN	CHANNEL CODE
CH0024V PITCH RATE	PCM	50 S/S	21	50	H1 P134-21 -241	51A1
CH0034H PITCH PUS FEEDBACK IN	PCM	50 S/S	22	50	H1 P134-23 -241	51A3
CH0047V PIV DIFF CLUTCH VOLTS CCPB	PCM	50 S/S	24	50	H1 P134-24 -241	51A4
CH0050K PITCH RATE ERROK AMPL OUT	PCM	100 S/S	14	100	H1 P134-14 -241	12A10
CH0067V P INTEGRATOR ATT ENROR SUMMING	PCM+	10 S/S	76	10	H2 P134-76 -241	11A31
CH0075V PITCH SCS ATT ERROK	PCM+	10 S/S	77	10	H2 P134-77 -241	11A32
CH0087A + PITCH/+X SCLENIOU DRIVER OUT	PCPE	200 S/S	321-01	200	E1 P73 -21 -G	22E -01
CH0088X - PITCH/+X SCLENIOU DRIVER CUT	PCPE	200 S/S	321-02	200	E1 P73 -22 -G	22E -02
CH0089A + PITCH/-X SCLENIOU DRIVER OUT	PCPE	200 S/S	321-03	200	E1 P73 -24 -G	22E -03
CH0090X - PITCH/-X SCLENIOU DRIVER OUT	PCPE	200 S/S	321-04	200	E1 P73 -25 -G	22E -04
CH0100X G-N DV MODE CONTROL	PCPE	10 S/S	346-05	10	E2 P71 -224-G	11E23 -05
CH0101X G-N ATT MODE CONTROL	PCPE	10 S/S	344-03	10	E2 P71 -15C-G	11E21 -03
CH0102X G-N ENTRY MODE CONTROL	PCPE	10 S/S	344-04	10	E2 P71 -182-G	11E21 -04
CH0103X MUNITOR MODE CONTROL	PCPE	10 S/S	344-05	10	E2 P71 -184-G	11E21 -05
CH1024V YAW RATE	PCM	50 S/S	25	50	H1 P134-25 -241	51A5
CH1034H YAW PUS FEEDBACK IN	PCM	50 S/S	27	50	H1 P134-27 -241	51A7
CH1047V YTV DIFF CLUTCH VOLTS CCPB	PCM	50 S/S	28	50	H1 P134-28 -241	51A8
CH1050K YAW RATE ERROK AMPL OUT	PCM	50 S/S	35	50	H1 P134-35 -241	51A15
CH1067V Y INTEGRATOR ATT ENROR SUMMING	PCM+	10 S/S	83	10	H2 P134-83 -241	11A38
CH1075V YAW SCS ATT ERROK	PCM+	10 S/S	84	10	H2 P134-84 -241	11A39
CH1087A +YAW/+X SCLENIOU DRIVER OUT	PCPE	200 S/S	321-05	200	E1 P73 -56 -G	22E -05
CH1088X -YAW/+X SCLENIOU DRIVER CUT	PCPE	200 S/S	321-06	200	E1 P73 -57 -G	22E -06
CH1089A +YAW/-X SCLENIOU DRIVER OUT	PCPE	200 S/S	321-07	200	E1 P73 -58 -G	22E -07
CH1090X -YAW/-X SCLENIOU DRIVER CUT	PCPE	200 S/S	321-08	200	E1 P73 -59 -G	22E -08
CH1100X SCS DV MODE CONTROL	PCPE	10 S/S	336-06	10	E2 P71 -126-G	11E15 -08
CH1101X SCS ATT MODE CONTROL	PCPE	10 S/S	344-08	10	E2 P71 -218-G	11E21 -08
CH1102X SCS ENTRY MODE CONTROL	PCPE	10 S/S	345-01	10	E2 P71 -151-G	11E22 -01
CH1103X SCS LOCAL VERTICAL MODE CONTROL	PCPE	10 S/S	349-08	10	E2 P71 -237-G	11E26 -08
CH2015V CUMB AG SMKD	PCM	10 S/S	104	10	H1 P134-104-241	51A59
CH2024V ROLL RATE	PCM	50 S/S	29	50	H1 P134-29 -241	51A9
CH2026V COMB RG SMKD	PCM	10 S/S	107	10	H1 P134-107-241	11A62
CH2030T COMBINED ATTITUDE GYRC TEMP	PCM	1 S/S	234	1	H1 P134-234-241	10A64
CH2050R ROLL RATE ERROK AMPL CUT	PCM	50 S/S	36	50	H1 P134-36 -241	51A16
CH2070V ROLL ATTITUDE ERROK AMP OUT	PCM	10 S/S	143	10	H1 P134-143-241	11A98

## PCK CHANNEL ASSIGNMENTS BY MEASUREMENT ID

## STABILIZATION CONTROL SYSTEM

SC17,20

AUGUST 15, 1966

MEAS ID	MEASUREMENT DESCRIPTION	RESPONSE RATE UNIT	CH	TF	PLUG AND PIN	CHANNEL CODE
		S/S	S/S	YU		
CH2075V	ROLL SIN OUT ATT	PCP+	10	H2	P134-86 -241	11A41
CH2087X	ROLL +/- SOLENOID DRIVER CUT	PCPE	200	S/S	321-05 200	E1 P73 -90 -G
CH2088X	ROLL /+Z SOLENOID DRIVER CUT	PCPE	200	S/S	321-10 200	E1 P73 -91 -G
CH2089A	ROLL /-Z SOLENOID DRIVER CUT	PCPE	200	S/S	321-11 200	E1 P73 -93 -G
CH2090X	ROLL /-Z SOLENOID DRIVER CUT	PCPE	200	S/S	321-12 200	E1 P73 -94 -G
CH2091X	ROLL /+Y SOLENOID DRIVER CUT	PCPE	200	S/S	321-13 200	E1 P73 -123 -G
CH2092X	KOULL /+Y SOLENOID DRIVER CUT	PCPE	200	S/S	321-14 200	E1 P73 -124 -G
CH2093X	KOULL /-Y SOLENOID DRIVER CUT	PCPE	200	S/S	321-15 200	E1 P73 -125 -G
CH2094X	KOULL /-Y SOLENOID DRIVER CUT	PCPE	200	S/S	321-16 200	E1 P73 -126 -G
CH3185X	05G MANUAL SWITCH	PCPE	10	S/S	330-01 10	E2 P71 -20 -G
CH4100H	RESOLVER SIN OUT PITCH ATT	PCP+	10	S/S	88	H2 P134-88 -241
CH4101H	RESOLVER COS OUT PITCH ATT	PCP+	10	S/S	90	H2 P134-90 -241
CH4102H	RESOLVER SIN OUT YAW ATT	PCP+	10	S/S	96	H2 P134-96 -241
CH4103H	RESOLVER COS OUT YAW ATT	PCP+	10	S/S	97	H2 P134-97 -241
CH4104H	RESOLVER SIN OUT ROLL ATT	FCP+	10	S/S	99	H2 P134-99 -241
CH4105H	RESOLVER COS OUT ROLL ATT	FCP+	10	S/S	101	H2 P134-101-241
CH4320X	SP S SOLENOID DRIVER OUT 1	PCPE	50	S/S	323-09 50	E1 P73 -31 -G
CH4321X	SP S SOLENOID DRIVER OUT 2	PCPE	50	S/S	323-10 50	E1 P73 -32 -G



## PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

## FLIGHT TECHNOLOGY

MEASUREMENT  
ID

AUGUST 15, 1966

SC20 ONLY

FLIGHT TECHNOLOGY	MEASUREMENT ID	DESCRIPTION	PCM CHANNEL ASSIGNMENTS		PCM CHANNEL ASSIGNMENTS	
			CH RATE	UNIT NO	CH S/S	TF YO AND PIN
CK1051K	RADIATION DOSIMETER	1	PCM	10	S/S	139
CK1052K	RADIATION DOSIMETER	2	PCM	10	S/S	157
CK1053T	TEMPERATURE/DOSIMETER		PCM	1	S/S	218

## PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

SERVICE PROPULSION SYSTEM  
MEASUREMENT ID  
MEAS  
10  
DESCRIPTION

PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

SC17-20

MEAS	DESCRIPTION	RESPONSE RATE UNIT	CH	CH S/S	TF YO	PLUS AND PIN	CHANNEL CODE
SP0001P	He PRESS TANK	PCM	10	S/S	111	10	H2 P134-111-241
SP0002T	He TEMP TANK	PCM	1	S/S	142	10	H1 P134-142-241
SP0003P	PRESS OXIDIZER TANKS	PCM	10	S/S	113	10	H2 P134-113-241
SP0006P	PRESS FUEL TANKS	PCM	10	S/S	115	10	H2 P134-115-241
SP0009P	PRESS MAIN VLV ENG OXIDIZER IN	PCM	10	S/S	121	10	H2 P134-121-241
SP0010P	PRESS MAIN VLV CNG FUEL IN	PCM	10	S/S	122	10	H2 P134-122-241
SP0020T	TEMP CHAMBER OUTER SKIN 1	PCM	1	S/S	254	1	H1 P136-14 -31
SP0022H	POSITION FUEL/OXIDIZER VLV 1	PCM	10	S/S	148	10	H1 P134-146-241
SP0023H	POSITION FUEL/OXIDIZER VLV 2	PCM	10	S/S	150	10	H1 P134-150-241
SP0024H	POSITION FUEL/OXIDIZER VLV 3	PCM	10	S/S	155	10	H1 P134-155-241
SP0025H	POSITION FUEL/OXIDIZER VLV 4	PCM	10	S/S	156	10	H1 P134-156-241
SP0050T	TEMP NOZZLE OUTER SKIN 1	PCM	1	S/S	255	1	H1 P136-15 -31
SP0600P	ENG VLV ACT SYS TANK PRESS PRI	PCM	1	S/S	248	1	H1 P136-6 -31
SP0601P	ENG VLV ACT SYS TANK PRESS SEC	PCM	10	S/S	170	10	H1 P134-176-241
SP0655W	QUANTITY SPS OXIDIZER TANK 1	PCM	1	S/S	258	1	H1 P136-18 -31
SP0656W	QUANTITY SPS OXIDIZER TANK 2	PCM	1	S/S	260	1	H1 P136-20 -31
SP0657W	QUANTITY SPS FUEL TANK 1	PCM	1	S/S	262	1	H1 P136-22 -31
SP0658W	QUANTITY SPS FUEL TANK 2	PCM	1	S/S	264	1	H1 P136-24 -31
SP0661P	PRESS ENGINE CHAMBER	PCM	100	S/S	15	100	H1 P134-15 -241

## PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

SC17.20 AUGUST 15, 1966

## REACTION CONTROL SYSTEM C/M

MEAS ID	MEASUREMENT DESCRIPTION	RESPONSE RATE UNIT NO	CH S/S	CH S/S	IF YU AND PIN	CHANNEL CCDE
CR001P	PRESS TANK A	PCM	1	S/S	251	1 H2 P136-11 -31 10A81
CR002P	PRESS TANK B	PCM	1	S/S	253	1 H2 P136-13 -31 10A83
CR003T	TEMP TANK A	PCM	1	S/S	222	1 H1 P134-222-241 10A52
CR004T	TEMP TANK B	PCM	1	S/S	225	1 H1 P134-225-241 10A55
CR005P	PRESS FUEL TANK A	PCM	10	S/S	152	10 H2 P134-152-241 11A107
CR006P	PRESS FUEL TANK B	PCM	10	S/S	159	10 H2 P134-155-241 11A114
CR001P	PRESS OXIDIZER TANK A	PCM	10	S/S	124	10 H2 P134-124-241 11A79
CR0012P	PRESS OXIDIZER TANK B	PCM	10	S/S	126	10 H2 P134-126-241 11A81
LR0514P	CCW ROLL ENG PRESS SYS A	PCM	100	S/S	17	100 H1 P134-17 -241 12A13
LR0516P	-YAW ENG PRESS SYS A	PCM	100	S/S	18	100 H1 P134-18 -241 12A14
CR0520P	CCW ROLL ENG PRESS SYS B	PCM	100	S/S	19	100 H1 P134-19 -241 12A15
CR0523P	+YAW ENG PRESS SYS B	PCM	100	S/S	20	100 H1 P134-20 -241 12A16
CR2201T	TEMP OXID ENG SYS A	VLV CCM	1	S/S	37	50 H1 P134-37 -241 51A17
CR2202T	TEMP OXID VLV YENG SYS A	PCM	1	S/S	123	10 H1 P134-123-241 11A78
CR2203T	TEMP OXID VLV + Y ENG SYS B	PCM	1	S/S	205	1 H1 P134-205-241 10A35
CR2204T	TEMP OXID VLV - P ENG SYS B	PCM	1	S/S	208	1 H1 P134-208-241 10A38
CR2205T	TEMP OXID VLV PENG SYS A	PCM	1	S/S	38	50 H1 P134-38 -241 51A18
CR2206T	TEMP OXID VLV C/M ENG SYS B	PCM	1	S/S	204	1 H1 P134-204-241 10A34

## PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

AUGUST 15, 1966

## REACTION CONTROL SYSTEM S/A

MEAS ID	MEASUREMENT DESCRIPTION	SC17-20	RESPONSE CH RATE UNIT NO	CH S/S	TF YO PIN	PLUG AND PIN	CHANNEL CODE
SR5001P	He PRESS TANK A	PCR+	1 S/S	259	1 H2	P136-19 -31	10A89
SR5002P	He PRESS TANK D	PCR+	1 S/S	261	1 H2	P136-21 -31	10A91
SR5003P	He PRESS TANK L	PCR+	1 S/S	263	1 H2	P136-23 -31	10A93
SR5004P	He PRESS TANK D	PCR+	1 S/S	266	1 H2	P136-26 -31	10A96
SR5005T	TEMP ENGINE PACKAGE A1	PCR	1 S/S	265	1 H1	P136-25 -31	10A95
SR5006T	TEMP ENGINE PACKAGE B1	PCR	1 S/S	232	1 H1	P134-23 2-241	10A62
SR5007T	TEMP ENGINE PACKAGE C1	PCR	1 S/S	266	1 H1	P136-26 -31	10A98
SR5008T	TEMP ENGINE PACKAGE D1	PCR	1 S/S	270	1 H1	P136-30 -31	10A100
SR5725P	A He MANIFOLD PRESS	PCR+	10 S/S	127	10 H2	P134-12 7-241	11A82
SR5776P	B He MANIFOLD PRESS	PCR+	10 S/S	133	10 H2	P134-13 3-241	11A88
SR5817P	C He MANIFOLD PRESS	PCR+	10 S/S	134	10 H2	P134-13 4-241	11A89
SR5830P	D He MANIFOLD PRESS	PCR+	10 S/S	136	10 H2	P134-13 6-241	11A91



## PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

AUGUST 15, 1966

SCI7-20

CREW SAFETY SYSTEM

MEASUREMENT  
ID  
DESCRIPTION

RESPONSE RATE UNIT NO CH S/S YO PIN PLUG AND CHANNEL CCODE

LS0001X J BALL VECTOR SWM OUTPUT	PCME	10	S/S	110	1C	H1	P134-110-241	11A65
BS0010X LAUNCH VEN GUIDANCE FAIL A	PCME	10	S/S	346-66 10	E2	P71	-226-G	11E23 -06
BS0020X LAUNCH VEH RATE EXCESSIVE A	PCME	10	S/S	347-01 1C	E2	P71	-156-G	11E24 -01
BS0030X ENG NO 1 OUT A	PCME	10	S/S	347-03 10	E2	P71	-158-G	11E24 -03
BS0032X ENG NO 2 OUT A	PCME	10	S/S	347-04 10	E2	P71	-191-G	11E24 -04
BS0034X ENG NO 3 OUT A	PCME	10	S/S	347-05 1C	E2	P71	-193-G	11E24 -05
BS0036X ENG NO 4 OUT A	PCME	10	S/S	347-06 10	E2	P71	-229-G	11E24 -06
BS0038X ENG NO 5 OUT A	PCME	10	S/S	347-07 10	E2	P71	-236-G	11E24 -07
BS0060X LIFT OFF SIGNAL A	PCME	10	S/S	348-03 1C	E2	P71	-161-G	11E25 -03
BS0061X LIFT OFF SIGNAL B	PCME	10	S/S	348-04 1C	E2	P71	-194-G	11E25 -04
CS0080X EUS ADAPT REQUEST A	PCME	10	S/S	348-07 10	E2	P71	-233-G	11E25 -07
LS0090X TOWER PHYS SEPARATION MCN A	PCME	10	S/S	116	10	H1	P134-116-241	11A71
LS0091X TOWER PHYS SEPARATION MCN B	PCME	10	S/S	117	10	H1	P134-117-241	11A72
CS0100X CM-SM PHYS SEPARATION MCN A	PCME	10	S/S	349-01 10	E2	P71	-162-G	11E26 -01
CS0101X CM-SM PHYS SEPARATION MCN B	PCME	10	S/S	349-02 10	E2	P71	-163-G	11E26 -02
SS0120X SW/ADAPTER PHYS SEPARATION MCN A	PCME	10	S/S	349-05 10	E2	P71	-159-G	11E26 -05
SS0121X SW/ADAPTER PHYS SEPARATION MCN B	PCME	10	S/S	349-06 10	E2	P71	-235-G	11E26 -06
BS0134X S-II SECOND PLANE SEPARATION A	PCME	10	S/S	345-08 10	E2	P71	-222-G	11E22 -08
CS0150X MASTER CAUTION-WARNING LN	PCME	10	S/S	350-06 1C	E2	P71	-238-G	11E27 -06



## PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

MEAS ID	MEASUREMENT DESCRIPTION	SC17,20	AUGUST 15, 1966				CHANNEL CODE
			RATE	UNIT NO	RESPONSE CH	CH	
			S/S	YU	TF	PLUG AND	
CT0012A	TAPE MOTION MONITOR UP	PCM E	10	S/S	338-07	10	E2
CT0013A	TAPE MOTION MONITOR R AND C	PCM E	10	S/S	338-04	10	E2
CT0014V	SIG GND PUS SUPPLY VCLIS	PCM +	10	S/S	136	10	H2
CT0016V	SIG GND NEG SUPPLY VCLIS	PCM +	10	S/S	140	10	H2
CT0017V	SENSUR EXCITATION 5 VOLTS	PCM +	10	S/S	146	10	H2
CT0018V	SENSUR EXCITATION 10 VOLTS	PCM +	10	S/S	147	10	H2
CT0089V	L-BAND XMTR OUTPUT MONITOR	PCM	10	S/S	167	10	H1
CT0098V	C-BAND DECODER JUT	PCM D	10	S/S	162	10	H1
CT0120X	PCM BIT RATE CHANGE 8 BIT	PCM D	10	S/S	355	1	N/A
CT0125V	PCM HI LEVEL 15 PERCENT REF	PCM +	10	S/S	149	10	H2
CT0126V	PCM HI LEVEL 15 PERCENT REF	PCM +	10	S/S	151	10	H2
CT0127V	PCM LO LEVEL 85 PERCENT REF	PCM +	1	S/S	314	1	L2
CT0128V	PCM LO LEVEL 15 PERCENT REF	PCM +	1	S/S	315	1	L2
CT0141X	CTE TIMING MODE MONITOR	PCM E	10	S/S	350-01	10	E2
CT0142F	CENTRAL TIMING GMT 32 BIT	PCM D	10	S/S	324	10	D2
					324-01	10	E2
					P73	-173-6	11E1 -01
					324-02	10	E2
					P73	-174-6	11E1 -02
					324-03	10	E2
					P73	-175-6	11E1 -03
					324-04	10	E2
					P73	-176-6	11E1 -04
					324-05	10	E2
					P73	-207-6	11E1 -05
					324-06	10	E2
					P73	-208-6	11E1 -06
					324-07	10	E2
					P73	-210-6	11E1 -07
					324-08	10	E2
					P73	-211-6	11E1 -08
					324-09	10	E2
					P73	-177-6	11E1 -09
					324-10	10	E2
					P73	-178-6	11E1 -10
					324-11	10	E2
					P73	-180-6	11E1 -11
					324-12	10	E2
					P73	-181-6	11E1 -12
					324-13	10	E2
					P73	-212-6	11E1 -13
					324-14	10	E2
					P73	-213-6	11E1 -14
					324-15	10	E2
					P73	-214-6	11E1 -15
					324-16	10	E2
					P73	-215-6	11E1 -16
					324-17	10	E2
					P73	-182-6	11E1 -17
					324-18	10	E2
					P73	-183-6	11E1 -18
					324-19	10	E2
					P73	-184-6	11E1 -19



## COMMUNICATIONS AND DATA SYSTEM

PCM CHANNEL ASSIGNMENTS BY MEASUREMENT ID

SC17-20 AUGUST 15, 1966

MEAS ID	MEASUREMENT DESCRIPTION	RESPONSE RATE UNIT NO	CH S/S	CH YU	IF PIN	PLUG AND C CODE	CHANNEL
CT0147V	S-BAND REC AGC VOLTAGE	PCM*	324-20 10	E2	P73	-185-G	11E1 -20
CT0191V	VHF/AM REC AGC VOLTAGE	PCM*	324-21 10	E2	P73	-216-G	11E1 -21
CT0212V	S-BAND RCVR STATIC PHASE ERROR	PCM*	324-22 10	E2	P73	-217-G	11E1 -22
CT0215V	S-BAND XMTR DETECTED RF OUTPUT	PCM*	324-23 10	E2	P73	-215-G	11E1 -23
CT0261V	UDL RECEIVER SIGNAL STRENGTH	PCM*	324-24 10	E2	P73	-220-G	11E1 -24
CT0262V	UDL SYS VALIDITY SIGNAL 8-BIT	PCMD	324-25 10	E2	P73	-186-G	11E1 -25
			324-26 10	E2	P73	-187-G	11E1 -26
			324-27 10	E2	P73	-188-G	11E1 -27
			324-28 10	E2	P73	-189-G	11E1 -28
			324-29 10	E2	P73	-221-G	11E1 -29
			324-30 10	E2	P73	-222-G	11E1 -30
			324-31 10	E2	P73	-224-G	11E1 -31
			324-32 10	E2	P73	-225-G	11E1 -32
CT0320V	VHF/AM XMTR DETECTED RF OUTPUT	PCM	10 S/S	163	H2	P134-163-241	11A118
CT0330V	VHF/FM XMTR PA DETECTED RF OUT	PCM	10 S/S	166	H1	P134-166-241	11A121
CT0340X	PCM TIMING SOURCE EXT OR INT	PCME	10 S/S	165	H2	P134-165-241	11A120
			1 S/S	269	H2	P134-165-241	10A99
			10 S/S	158	H2	P134-158-241	11A113
			50 S/S	323	01	P73	510
				323-01 50	E1	P73	-26 -6
				323-02 50	E1	P73	-27 -6
				323-03 50	E1	P73	-29 -6
				323-04 50	E1	P73	-30 -6
				323-05 50	E1	P73	-60 -6
				323-06 50	E1	P73	-61 -6
				323-07 50	E1	P73	-62 -6
				323-08 50	E1	P73	-63 -6
				16	H1	P134-16 -241	SIE -08
				10 S/S	100	H1	12A12
				160	10	P134-160-241	11A115
				350-03 10	E2	P71	11E27 -03

## TAPE RECORDER CHANNEL ASSIGNMENTS

SC17,20

STRUCTURES	MEAS ID	MEASUREMENT DESCRIPTION	RATE	RESPONSE UNIT	VCO CH NO	TR CH NO	CUM CH NO
LAU01A	X	AXIS SPACECRAFT ACCEL HIGH	20	CPS	MCD 5	F-2	
LAU01A	Y	AXIS SPACECRAFT ACCEL	25	CPS	MCD 6	F-2	
LAU01A	Z	AXIS SPACECRAFT ACCEL	35	CPS	MCD 7	F-2	
LAU01A	Y	AXIS TURN ACCEL	45	CPS	MCU 8	F-2	
LAU01A	Z	AXIS TURN ACCEL	59	CPS	MOD 9	F-2	
LAU01A	X	AXIS ENTRY ACCEL	100	S/S	PCM 11		
CA0152A	Y	AXIS ENTRY ACCEL	100	S/S	PCM 12		
CA0152A	Z	AXIS ENTRY ACCEL	100	S/S	PCM 13		
CA0210T	TEMP	TMR LEG MELL MALL 135 Deg	10	S/S		F-9*	IL1
CA0211T	TEMP	TMR LEG MELL MALL 225 Deg	10	S/S		F-9*	IL2
CA0212T	TEMP	TMR LEG UMB CCN AT 225 Deg	10	S/S		F-9*	IL3
CA1401S	STRA IN	AX AF1 HS CUT L-Z	10	S/S		F-4*	2L76
CA1402S	STRA IN	AX AF1 HS IN Z-Z	10	S/S		F-4*	2L77
CA1403S	STRA IN	AX AF1 HS OUT Y-Y	10	S/S		F-4*	2L78
CA1404S	STRA IN	AX AF1 HS IN Y-Y	10	S/S		F-4*	2L79
CA1441T	TEMP CM-SM	UMB TUBE LCC 1	10	S/S		F-9*	IL4
CA1442T	TEMP CM-SM	UMB TUBE LCC 2	10	S/S		F-9*	IL5
CA1443T	TEMP CM-SM	UMB TUBE LCC 3	10	S/S		F-9*	IL6
CA1444T	TEMP CM-SM	UMB TUBE LCC 4	10	S/S		F-9*	IL7
CA1445T	TEMP CM-SM	UMB BRANCH A LCC 1	10	S/S		F-9*	IL8
CA1446T	TEMP CM-SM	UMB BRANCH A LCC 2	10	S/S		F-9*	IL9
CA1447T	TEMP CM-SM	UMB BRANCH A LCC 3	10	S/S		F-9*	IL10
CA1448T	TEMP CM-SM	UMB BRANCH A LCC 4	10	S/S		F-9*	IL11
CA1449T	TEMP CM-SM	UMB BRANCH A LCC 5	10	S/S		F-9*	IL12
CA1450T	TEMP CM-SM	UMB BRANCH A LCC 6	10	S/S		F-9*	IL13
CA1451T	TEMP CM-SM	UMB CONNECTOR LCC A	10	S/S		F-9*	IL14
CA1452T	TEMP CM-SM	UMB HEAT SINK LCC B	10	S/S		F-9*	IL15
CA1453T	TEMP CM-SM	UMB SUPT TUBE LCC C	10	S/S		F-9*	IL16
CA1454T	TEMP CM-SM	UMB BRANCH A LCC 7	10	S/S		F-9*	IL17
CA1455T	TEMP CM-SM	UMB GUN TO IN-STRUCT	10	S/S		F-9*	IL18
CA1460T	TEMP AFT HS	TENSION TIE BL	10	S/S		F-9*	IL19
CA1464T	TEMP CM	TENSION TIE BOLT FITTING	10	S/S		F-9*	IL20
CA1465T	TEMP CM	TENSION TIE BOLT NUT	10	S/S		F-9*	IL21
CA1474T	TEMP CM	SHEAR PAD S-A	10	S/S		F-9*	IL22



## TAPE RECORDER CHANNEL ASSIGNMENTS

STRUCTURES

M LAS IU	MEASUREMENT DESCRIPTION	RESFLAG	VCO	TR	CMM	CH NO
		RATE UNIT	CH NU	CH NO		
CA1475T TEMP	SHEAR PAU S-B	10	S/S	F-9*	1L23	
CA1476T TEMP	SHEAR PAU S-L	10	S/S	F-9*	1L24	
CA1477T TEMP	SHEAR PAU S-BL	10	S/S	F-9*	1L25	
CA1478T TEMP NEAR	SHEAR PAU 3	10	S/S	F-9*	1L26	
CA1479T TEMP NEAR	SHEAR PAU 5	10	S/S	F-9*	1L27	
CA1480T TEMP	SHEAR PAC 3 FIBERGLASS BL	10	S/S	F-9*	1L28	
CA1481T TEMP	SHEAR PAC 5 FIBERGLASS BL	10	S/S	F-9*	1L29	
CA1940S STRAIN AX	AFT HS OUT RADIAL	10	S/S	F-4*	2L85	
CA1941S STRAIN AX	AFT HS IN RADIAL	10	S/S	F-4*	2L86	
CA1942S STRAIN AX	AFT HS OUT TANG	10	S/S	F-4*	2L80	
CA1943S STRAIN AX	AFT HS IN TANG	10	S/S	F-4*	2L81	
CA1944S STRAIN AX	AFT HS OUT RADIAL	10	S/S	F-4*	2L82	
CA1945S STRAIN AX	AFT HS IN RADIAL	10	S/S	F-4*	2L83	
CA1946S STRAIN AX	AFT HS OUT TANG	10	S/S	F-1*	1H76	
CA1947S STRAIN AX	AFT HS IN TANG	10	S/S	F-1*	1H77	
CA1948S STRAIN AX	AFT HS OUT RADIAL	10	S/S	F-1*	1H78	
CA1949S STRAIN AX	AFT HS IN RADIAL	10	S/S	F-1*	1H73	
CA1950S STRAIN AX	AFT HS OUT TANG	10	S/S	F-1*	1H74	
CA1951S STRAIN AX	AFT HS IN TANG	10	S/S	F-1*	1H75	
SA2020G STRAIN AX	TENSION BUILT BEAM 2	600	CPS	16	F-7.8	
SA2021G STRAIN AX	TENSION BUILT BEAM 4	160	CPS	MOL 12	F-2	
SA2022G STRAIN AX	TENSION BUILT BEAM 6	220	CPS	MOL 13	F-2	
SA2210U X AXIS VIB	SM AFT BLKHU NEAR	5	KC	WB	F-11	
SA2211U X AXIS VIB	SM AFT BLKHU NEAR	5	KC	WB	F-12	
SA2212D X AXIS VIB	HC PRESS PANEL	5	KC	WB	F-13	
SA2213U TANG VIB	HC PRESS PANEL	5	KC	WB	F-14	
SA2214D Y AXIS VIB	SM U2 TANK MCINT	330	CPS	MCD 14	F-2	
SA2215U Z AXIS VIB	SM U2 TANK MCINT	110	CPS	T/R 11	F-7.8	
SA2216D RADIAL VIB	SM BEAM 4 AND SHELL	160	CPS	T/R 12	F-7.8	
SA2217D TANG VIB	SM BEAM 4 AND SHELL	330	CPS	T/R 14	F-7.8	
SA2218D RADIAL VIB	SM EPS RAJULATOR PANEL	450	CPS	T/R 15	F-7.8	
CA2530D Y AXIS VIB	CM LEB KICKRING	5	KC	WB	F-5	
CA2531D Z AXIS VIB	CM LEB KICKRING	5	KC	WB	F-6	
CA2532U X AXIS VIB	CM LEB HNYCMB BLKHU	450	CPS	MOD 15	F-2	
CA2533U Z AXIS VIB	CM LEB HNYCMB BLKHU	600	CPS	MOD 16	F-2	



## TAPC RECORDER CHANNEL ASSIGNMENTS

SCI7.20

## STRUCTURES

PIECE NO	MEASUREMENT DESCRIPTION	RESPONSE VCO RATE UNIT	TR CH NO	COMM CH NO
CA2534U X AXIS	VIB UN LSS SEP MCH	5 KC	WB	F-10
CA2535D RAJIAL	VIB CR LSS SEP MCH	2.1 KC	MOD E	F-2
CA2536K FWD HS	KAVIA LUN GAGE LCC 2	10 S/S		1L30
CA2536K FWD HS	KAVIA LUN GAGE LCC 15	10 S/S		F-9*
CA2536K AFT HS	KAVIA LUN GAGE LCC 3	10 S/S		1L31
CA2536K AFT HS	KAVIA LUN GAGE LCC 7	10 S/S		F-9*
CA3401K FLUX	UMBILICAL LOC 1	10 S/S		1L32
CA3402K FLUX	UMBILICAL LOC 2	10 S/S		F-9*
CA3601T TEMP	ATTACH KING AT 90 DEG	10 S/S		1L33
CA3601T TEMP	ATTACH KING AT 270 DEG	10 S/S		F-9*
CA3601T TEMP	STRINGER 5	10 S/S		1L34
CA3641T TEMP	STRINGER 1C	10 S/S		F-9*
CA3642T TEMP	SIRINGER 1C CREW HATCH	10 S/S		1L35
LA5010R FLUX	AFT HS LOC 1	10 S/S		F-9*
CA5011K FLUX	AFT HS LOC 2	10 S/S		1L36
CA5011K FLUX	AFT HS LOC 3	10 S/S		F-9*
CA5013R FLUX	AFT HS LOC 4	10 S/S		1L37
CA5014R FLUX	AFT HS LOC 5	10 S/S		F-9*
CA5015R FLUX	AFT HS LOC 6	10 S/S		1L38
CA5016R FLUX	AFT HS LOC 7	10 S/S		F-9*
CA5017R FLUX	AFT HS LOC 8	10 S/S		1L39
CA5018R FLUX	AFT HS SHEAR PAW 3	10 S/S		F-9*
CA5019R FLUX	AFT HS SHEAR PAW 5	10 S/S		1L40
CA5020R FLUX	AFT HS SHEAR PAW 5	10 S/S		F-9*
CA5020R AFT HT SHLD BNDRY STATIC PRESS 1	10 S/S			1L41
CA5024P AFT HT SHLD BNDRY STATIC PRESS 2	10 S/S			F-9*
CA5042P AFT HT SHLD BNDRY STATIC PRESS 3	10 S/S			1L42
CA5043P AFT HT SHLD BNDRY STATIC PRESS 4	10 S/S			F-9*
CA5044P AFT HT SHLD BNDRY STATIC PRESS 5	10 S/S			1L43
CA5045P AFT HT SHLD BNDRY STATIC PRESS 6	10 S/S			F-9*
CA5046P AFT HT SHLD BNDRY STATIC PRESS 7	10 S/S			1L44
CA5001R CHAR AFT HS LOC 7	10 S/S			F-9*
CA5001R CHAR AFT HS LOC 5	10 S/S			1L45
CA5001T TEMP AFT HS LOC 1	10 S/S			F-9*
CA5001T TEMP AFT HS LOC 2	10 S/S			1L46



## TAPE RECORDER CHANNEL ASSIGNMENTS

## STRUCTURES

SC17-20

MEAS ID	MEASUREMENT DESCRIPTION	RESPONSE VCO			COMM CH NO
		RATE	UNIT	CH NO	
CA5090T TEMP AFT HS LOC 3		1.0	S/S		F-9*
CA5093T TEMP AFT HS LOC 4		1.0	S/S		F-9*
CA5100T TEMP AFT HS LOC 5 BL		1.0	S/S		F-9*
CA5101T TEMP AFT HS LOC 2		1.0	S/S		F-9*
CA5102T TEMP AFT HS LOC 5		1.0	S/S		F-9*
CA5103T TEMP AFT HS LOC 5		1.0	S/S		F-9*
CA5104T TEMP AFT HS LOC 5		1.0	S/S		F-9*
CA5105T TEMP AFT HS LOC 6 BL		1.0	S/S		F-9*
CA5110T TEMP AFT HS LOC 7		1.0	S/S		F-9*
CA5111T TEMP AFT HS LOC 7		1.0	S/S		F-9*
CA5112T TEMP AFT HS LOC 7		1.0	S/S		F-9*
CA5113T TEMP AFT HS LOC 7		1.0	S/S		F-9*
CA5114T TEMP AFT HS LOC 7		1.0	S/S		F-9*
CA5115T TEMP AFT HS LOC 8 BL		1.0	S/S		F-9*
CA5550R FLUX SIDE HS LOC 1		1.0	S/S		F-9*
CA5551R FLUX SIDE HS LOC 2		1.0	S/S		F-9*
CA5552R FLUX SIDE HS LOC 3		1.0	S/S		F-9*
CA5553R FLUX FWD HS LOC 4		1.0	S/S		F-9*
CA5554R FLUX SIDE HS LOC 5		1.0	S/S		F-9*
CA5555R FLUX SIDE HS LOC 6		1.0	S/S		F-9*
CA5556R FLUX SIDE HS LOC 7		1.0	S/S		F-9*
CA5557R FLUX SIDE HS LOC 8		1.0	S/S		F-9*
CA5558R FLUX SIDE HS LOC 9		1.0	S/S		F-9*
CA5559R FLUX FWD HS LOC 10		1.0	S/S		F-9*
CA5560R FLUX SIDE HS LOC 11		1.0	S/S		F-9*
CA5561R FLUX SIDE HS LOC 12		1.0	S/S		F-9*
CA5562R FLUX SIDE HS LOC 13		1.0	S/S		F-9*
CA5563R FLUX SIDE HS LOC 14		1.0	S/S		F-9*
CA5564R FLUX SIDE HS LOC 15		1.0	S/S		F-9*
CA5565R FLUX SIDE HS LOC 16		1.0	S/S		F-9*
CA5566R FLUX FWD HS LOC 17		1.0	S/S		F-9*
CA5580P PRESS SIDE HS LOC 1		1.0	S/S		F-1*
CA5581P PRESS SIDE HS LOC 2		1.0	S/S		F-1*
CA5582P PRESS SIDE HS LOC 3		1.0	S/S		F-1*
CA5583P PRESS FWD HS LOC 4		1.0	S/S		F-1*



## TAPE RECORDER CHANNEL ASSIGNMENTS

SC17-20

## STRUCTURES

MEAS ID	MEASUREMENT DESCRIPTION	RÉSEAU	VCO RATE	TR UNIT	CH NO	COMM CH NO
CAS55064P	PRESS SIDE HS LOC 5	10	S/S		F-1*	1H8
CAS55065P	PRESS SIDE HS LOC 7	10	S/S		F-1*	1H9
CAS55066P	PRESS SIDE HS LOC 9	10	S/S		F-1*	1H10
CAS55067P	PRESS SIDE HS LOC 11	10	S/S		F-1*	1H11
CAS55068P	PRESS SIDE HS LOC 14	10	S/S		F-1*	1H12
CAS55069P	PRESS FWD HS LOC 16	10	S/S		F-1*	1H13
CAS56104R	CHAR SIDE HS LOC 1	10	S/S		F-1*	1H14
CAS56105R	CHAR SIDE HS LOC 2	10	S/S		F-1*	1H15
CAS56106R	CHAR SIDE HS LOC 3	10	S/S		F-1*	1H16
CAS56107R	CHAR FWD HS LOC 4	10	S/S		F-1*	1H17
CAS56108R	CHAR SIDE HS LOC 5	10	S/S		F-1*	1H18
CAS56109R	CHAR SIDE HS LOC 7	10	S/S		F-1*	1H19
CAS56110R	CHAR SIDE HS LOC 8	10	S/S		F-1*	1H20
CAS56112R	CHAR SIDE HS LOC 9	10	S/S		F-1*	1H21
CAS56113R	CHAR SIDE HS LOC 10	10	S/S		F-1*	1H22
CAS56114R	CHAR SIDE HS LOC 11	10	S/S		F-1*	1H23
CAS56234R	CHAR SIDE HS LOC 14	10	S/S		F-1*	1H24
CAS56235R	CHAR SIDE HS LOC 15	10	S/S		F-1*	1H25
CAS56236R	CHAR SIDE HS LOC 16	10	S/S		F-1*	1H26
CAS56238R	CHAR FWD HS LOC 17	10	S/S		F-1*	1H27
CAS57017T	TEMP SIDE HS LOC 1-A	10	S/S		F-4*	2L1
CAS57018T	TEMP SIDE HS LOC 1-B	10	S/S		F-4*	2L2
CAS57021T	TEMP SIDE HS LOC 1-C	10	S/S		F-4*	2L3
CAS57031T	TEMP SIDE HS LOC 1-BL	10	S/S		F-4*	2L4
CAS57037T	TEMP SIDE HS LOC 2-A	10	S/S		F-4*	2L5
CAS57038T	TEMP SIDE HS LOC 2-B	10	S/S		F-4*	2L6
CAS57039T	TEMP SIDE HS LOC 2-C	10	S/S		F-4*	2L7
CAS57040T	TEMP SIDE HS LOC 2-BL	10	S/S		F-4*	2L8
CAS57107T	TEMP SIDE HS LOC 3-A	10	S/S		F-4*	2L9
CAS57111T	TEMP SIDE HS LOC 3-B	10	S/S		F-4*	2L10
CAS57122T	TEMP SIDE HS LOC 3-C	10	S/S		F-4*	2L11
CAS57131T	TEMP SIDE HS LOC 3-BL	10	S/S		F-4*	2L12
CAS57137T	TEMP FWD HS LOC 4-A	10	S/S		F-4*	2L13
CAS57167T	TEMP FWD HS LOC 4-B	10	S/S		F-4*	2L14
CAS57177T	TEMP FWD HS LOC 4-BL	10	S/S		F-4*	2L15



## TAPE RECORDER CHANNEL ASSIGNMENTS

## STRUCTURES

SC17-20

MEAS ID	MEASUREMENT DESCRIPTION	RESPONSE RATE UNIT	VCO CH NO	TR CH NO	CMM CH NO
CA5720T TEMP	SIDE HS LUC 5-A	10	S/S	F-4*	2L16
CA5721T TEMP	SIDE HS LUC 5-B	10	S/S	F-4*	2L17
CA5722T TEMP	SIDE HS LUC 5-C	10	S/S	F-4*	2L18
CA5723T TEMP	SIDE HS LUC 5 BL	10	S/S	F-4*	2L19
CA5725T TEMP	SIDE HS LUC 6 BL	10	S/S	F-4*	2L20
CA5730T TEMP	SIDE HS LUC 7-A	10	S/S	F-4*	2L21
CA5731T TEMP	SIDE HS LUC 7-B	10	S/S	F-4*	2L22
CA5732T TEMP	SIDE HS LUC 7-C	10	S/S	F-4*	2L23
CA5733T TEMP	SIDE HS LUC 7 BL	10	S/S	F-4*	2L24
CA5735T TEMP	SIDE HS LUC 8-A	10	S/S	F-4*	2L25
CA5736T TEMP	SIDE HS LUC 8-B	10	S/S	F-4*	2L26
CA5737T TEMP	SIDE HS LUC 8-C	10	S/S	F-4*	2L27
CA5738T TEMP	SIDE HS LUC 8 BL	10	S/S	F-4*	2L28
CA5740T TEMP	SIDE HS LUC 9-A	10	S/S	F-4*	2L29
CA5741T TEMP	SIDE HS LUC 9-B	10	S/S	F-4*	2L30
CA5742T TEMP	SIDE HS LUC 9 BL	10	S/S	F-4*	2L31
CA5745I TEMP	FWD HS LUC 10-A	10	S/S	F-4*	2L32
CA5746T TEMP	FWD HS LUC 10-B	10	S/S	F-4*	2L33
CA5747T TEMP	FWD HS LUC 10 BL	10	S/S	F-4*	2L34
CA5750T TEMP	SIDE HS LUC 11-A	10	S/S	F-4*	2L35
CA5751T TEMP	SIDE HS LUC 11-B	10	S/S	F-4*	2L36
CA5752T TEMP	SIDE HS LUC 11 BL	10	S/S	F-4*	2L37
CA5755T TEMP	SIDE HS LUC 12 BL	10	S/S	F-4*	2L38
CA5760T TEMP	SIDE HS LUC 13 BL	10	S/S	F-4*	2L39
CA5765T TEMP	SIDE HS LUC 14-A	10	S/S	F-4*	2L40
CA5766T TEMP	SIDE HS LUC 14-B	10	S/S	F-4*	2L41
CA5767T TEMP	SIDE HS LUC 14 BL	10	S/S	F-4*	2L42
CA5770T TEMP	SIDE HS LUC 15-A	10	S/S	F-4*	2L43
CA5771T TEMP	SIDE HS LUC 15-B	10	S/S	F-4*	2L44
CA5772T TEMP	SIDE HS LUC 15 BL	10	S/S	F-4*	2L45
CA5775T TEMP	SIDE HS LUC 16-A	10	S/S	F-4*	2L46
CA5776T TEMP	SIDE HS LUC 16-B	10	S/S	F-4*	2L47
CA5777T TEMP	SIDE HS LUC 16 BL	10	S/S	F-4*	2L48
CA5780T TEMP	FWD HS LUC 17-A	10	S/S	F-4*	2L49
CA5781T TEMP	FWD HS LUC 17-B	10	S/S	F-4*	2L50



## TAPE RECORDER CHANNEL ASSIGNMENTS

SC17-20

STRUCTURES	MEAS ID	MEASUREMENT DESCRIPTION	RESPONSE RATE UNIT	VCO CH NO	TR CH NO	COMM CH NO
CA75762T	TEMP	FWD HS LDC 17 BL	10	S/S	F-4*	2L50
CA74461T	TEMP	C-BAND ANT GUN AT 298 DEG	10	S/S	F-4*	2L51
CA74471T	TEMP	C-BAND ANT GUN AT 166 DEG	10	S/S	F-4*	2L52
CA76031T	TEMP	LH AIR VENT DABBLE	10	S/S	F-4*	2L53
CA76071T	TEMP	RCS FUEL DUMP BULL/PLUG	10	S/S	F-4*	2L54
CA76081T	TEMP	HS TIE DOWN BOLT LDC A	10	S/S	F-4*	2L55
CA76091T	TEMP	HS TIE DOWN BOLT LDC B	10	S/S	F-4*	2L56
CA76101T	TEMP	HS TIE DOWN BOLT LDC C	10	S/S	F-4*	2L57
CA76741T	TEMP	CH AIRLOCK TUNNEL +Z AXIS	10	S/S	F-4*	2L58
CA76751T	TEMP	FWD BULKHEAD +Z AXIS	10	S/S	F-4*	2L59
CA76761T	TEMP	TUP SURFACE -P OR RCS ENG	10	S/S	F-4*	2L60
CA77011T	TEMP	PILOT CHUTE MURKAR	10	S/S	F-4*	2L61
CA77611T	TEMP	MAIN CHUTE HARNESS	10	S/S	F-4*	2L62
CA77621T	TEMP	MAIN CHUTE PACK	10	S/S	F-4*	2L63
CA78001T	TEMP	CM PRESS HULL AFT BLKHD 1	10	S/S	F-4*	2L64
CA78011T	TEMP	CM PRESS HULL AFT BLKHD 2	10	S/S	F-4*	2L65
CA78021T	TEMP	HATCH OUT WINDOW SPT	10	S/S	F-4*	2L66
CA78201T	TEMP	LH SIDE WINDOW 4L	10	S/S	F-4*	2L68
CA78211T	TEMP	LH SIDE WINDOW HS FRAME	10	S/S	F-4*	2L69
CA78221T	TEMP	LH SIDE WINDOW IN FRAME	1	S/S	PCM 277	
AA78601T	TEMP	SLA OUTER SHELL 1	10	S/S	F-3*	2H1
AA78611T	TEMP	SLA OUTER SHELL 2	10	S/S	F-3*	2H2
AA78621T	TEMP	SLA OUTER SHELL 3	10	S/S	F-3*	2H3
AA78631T	TEMP	SLA OUTER SHELL 4	10	S/S	F-3*	2H4
AA78641T	TEMP	SLA OUTER SHELL 5	10	S/S	F-3*	2H5
AA78651T	TEMP	SLA OUTER SHELL 6	10	S/S	F-3*	2H6
AA78661T	TEMP	SLA OUTER SHELL 7	10	S/S	F-3*	2H7
AA78671T	TEMP	SLA OUTER SHELL 8	10	S/S	F-3*	2H8
AA78681T	TEMP	SLA OUTER SHELL 9	10	S/S	F-3*	2H9
AA78691T	TEMP	SLA OUTER SHELL 10	10	S/S	F-3*	2H10
AA78701T	TEMP	SLA OUTER SHELL 11	10	S/S	F-3*	2H11
AA78711T	TEMP	SLA OUTER SHELL 12	10	S/S	F-3*	2H12
AA78721T	TEMP	SLA OUTER SHELL 13	10	S/S	F-3*	2H13
AA78731T	TEMP	SLA OUTER SHELL 14	10	S/S	F-3*	2H14
AA78741T	TEMP	SLA INNER SHELL 15	10	S/S	F-3*	2H15



## TAPE RECORDER CHANNEL ASSIGNMENTS

STRUCTURES MEAS ID	MEASUREMENT DESCRIPTION	SCL 1,20			
		RESPONSE RATE UNIT	VCU CH NC	TR CH NO	COLUMN CH NO
LA7d75T TEMP	STEAM VENT TIDE	10	S/S	F-4*	2L69
LA7d75T TEMP	STEAM VENT DOWLINE	10	S/S	F-4*	2L70
CA8521T TEMP	STEAM VENT	10	S/S	F-4*	2L71
AA8124S SLA OUTER	SHELL LONG STRAIN 1	10	S/S	F-3*	2H16
AA8124S SLA OUTER	SHELL CIRC STRAIN 1	10	S/S	F-3*	2H17
AA8122S SLA INNER	SHELL LONG STRAIN 1	10	S/S	F-3*	2H18
AA8123S SLA INNER	SHELL CIRC STRAIN 1	10	S/S	F-3*	2H19
AA8124S SLA OUTER	SHELL LONG STRAIN 2	10	S/S	F-3*	2H20
AA8124S SLA OUTER	SHELL CIRC STRAIN 2	10	S/S	F-3*	2H21
AA8120S SLA INNER	SHELL LONG STRAIN 2	10	S/S	F-3*	2H22
AA8127S SLA INNER	SHELL CIRC STRAIN 2	10	S/S	F-3*	2H23
AA8128S SLA OUTER	SHELL LONG STRAIN 3	10	S/S	F-3*	2H24
AA8129S SLA OUTER	SHELL CIRC STRAIN 3	10	S/S	F-3*	2H25
AA8130S SLA INNER	SHELL LONG STRAIN 3	10	S/S	F-3*	2H26
AA8131S SLA INNER	SHELL CIRC STRAIN 3	10	S/S	F-3*	2H27
AA8132S SLA OUTER	SHELL LONG STRAIN 4	10	S/S	F-3*	2H28
AA8133S SLA OUTER	SHELL CIRC STRAIN 4	10	S/S	F-3*	2H27
AA8134S SLA INNER	SHELL LONG STRAIN 4	10	S/S	F-3*	2H30
AA8135S SLA INNER	SHELL CIRC STRAIN 4	10	S/S	F-3*	2H31
LA8520T TEMP CM	S-BAND ANT WINDCH LCC A	10	S/S	F-4*	2L72
CA8521T TEMP CM	S-BAND ANT WINDCH LCC B	10	S/S	F-4*	2L73
CA8522T TEMP CM	S-BAND ANT WINDCH LCC C	10	S/S	F-4*	2L74
CA8523T TEMP CM	S-BAND ANT WINDCH BL	10	S/S	F-4*	2L75



## TAPE RECORDER CHANNEL ASSIGNMENTS

ENVIRONMENTAL CONTROL SYSTEMS MEASUREMENT	DESCRIPTION	SC17,20 RESFICSE VCO RATE UNIT	TR CH NO	CMM CH NO	
CF0120P PRESS H2O AND GLYCOL TANKS		10 S/S	F-1*	1H32	
CF0245T TEMP J2 REG INLET		1 S/S	PCM 228		
CF0327P PRESS MASTÉ H2O TANK DRAIN		10 S/S	F-1*	1H37	
CF0481T TEMP CP BRANCH 1 INLET		1 S/S	PCM 5		
CF0482T TEMP CP BRANCH 1 OUTLET		1 S/S	PCM 6		
CF0483T TEMP CP BRANCH 2 INLET		1 S/S	PCM 7		
CF0484T TEMP CP BRANCH 2 OUTLET		1 S/S	PCM 245		
CFU54SP DIFF PRESS COLDPLATE BRANCH 1		1 S/S	PCM 238		
CF055UP DIFF PRESS COLDPLATE BRANCH 2		1 S/S	PCM 109		



## TAPE RECORDER CHANNEL ASSIGNMENTS

SC17.20

## SERVICE PROPULSION SYSTEM

MEAS ID	MEASUREMENT DESCRIPTION	RESPONSE RATE	VCO UNIT	TR CH NO	COMM CH NO
SP2054T	TEMP GIMBAL ACTR CASE (YAW)	10	S/S	F-3*	2H32
SP2055T	TEMP GIMBAL ACTR CASE (PITCH)	10	S/S	F-3*	2H33
SP2071T	TEMP CHAMBER/NUZZLE FLANGE	10	S/S	F-3*	2H34
SP2075T	TEMP OX/H2 EXCHANGER HELIUM IN	10	S/S	F-3*	2H35
SP2076T	TEMP OX/H2 EXCHANGER HELIUM OUT	10	S/S	F-3*	2H36
SP2077T	TEMP FUEL/H2 EXCHANGER HELIUM IN	10	S/S	F-3*	2H37
SP2078T	TEMP FUEL/H2 EXCHANGER HELIUM OUT	10	S/S	F-3*	2H38



## TAPE RECORDER CHANNEL ASSIGNMENTS

## REACTION CONTROL SYSTEM C/M

SC17-20

MES	MEASUREMENT DESCRIPTION	RESPONSE RATE UNIT	VCO CH NO	TR CH NO	COMM CH NO
CR4570T	TEMP SEAL + PITCH ENG SYS A	1.0	S/S	F-1*	1H48
CR4571T	TEMP SEAL + PITCH ENG SYS B	1.0	S/S	F-1*	1H49
CR2103T	TEMP -Y ENG INJECTOR SYS A	1.0	S/S	F-1*	1H50
CR2114T	TEMP CCW ROLL INJECTOR SYS A	1.0	S/S	F-1*	1H51
CR2115T	TEMP LCH ROLL INJECTOR SYS B	1.0	S/S	F-1*	1H52
CR2116T	TEMP +Y ENG INJECTOR SYS B	1.0	S/S	F-1*	1H53
CR4553T	-YAW ENG OUT WALL TEMP 1 SYS A	1.0	S/S	F-1*	1H54
CR4554T	-YAW ENG OUT WALL TEMP 2 SYS A	1.0	S/S	F-1*	1H55
CR4556T	+YAW ENG OUT WALL TEMP 1 SYS B	1.0	S/S	F-1*	1H56
CR4557T	+YAW ENG OUT WALL TEMP 2 SYS B	1.0	S/S	F-1*	1H57
CR4559T	CCW ROLL ENG OUT WALL T 1 SYS A	1.0	S/S	F-1*	1H58
CR4560T	CCW ROLL ENG OUT WALL T 2 SYS A	1.0	S/S	F-1*	1H59
CR4580T	CCW ROLL ENG OUT WALL T 1 SYS B	1.0	S/S	F-1*	1H60
CR4581T	CCW ROLL ENG OUT WALL T 2 SYS B	1.0	S/S	F-1*	1H61



## TAPE RECORDER CHANNEL ASSIGNMENTS

## REACTION CONTROL SYSTEM S/N

SC17,20

MEAS	M. A. SUBMISSION DESCRIPTION	RESPONSE RATE UNIT	VCO CH NO	T/R CH NO	COMM CH NO
SR7125T	TEMP INJ HEAU -P ENG	SYS A	10	S/S	F-B
SR7126T	TEMP INJ HEAU +Y CNG	SYS B	10	S/S	F-B
SR7127T	TEMP INJ HEAU CH ENG	SYS C	10	S/S	2H40
SR7140T	TEMP INJ HEAU CCH ENG	SYS D	10	S/S	F-B



## TAPR RECORDER CHANNEL ASSIGNMENTS

## LOCATIONS / DATA SYSTEMS

SCI 7,20

ITEM	MEASUREMENT	DESCRIPTION	VCC	TRACK NO	COMM CHAN
ST1300V	HIGH LEVEL COMM	NU 2 - ZERO VOLT REF	-----	-----	2H86
ST1300V	HIGH LEVEL COMM	NU 2 - FIVE VOLT REF	-----	-----	2H87
CT1301V	MODULATION PAK-1/K	COMPOSITE CUT	DIR REC	F-2	
CT1301V	LOW LEVEL COMM	NU 1 UPDN CUT	SH BLK	F9/10(A5)	
CT1301V	LOW LEVEL COMM	NU 2 UPDN CUT	SH BLK	F4/6(A1)	
CT1302V	LOW LEVEL COMM	NU 1 - UPDN CUT	SH BLK	F1/8(A3)	
ST1303V	HIGH LEVEL COMM	NU 2 - UPDN CUT	SH BLK	F3/12(A7)	
CT1410F	2 SEC AND TIME	CORRELATION REF	REC AMPL	14(A9)	
CT1411F	TIME	CORRELATION REF	TRIG 13	F7/8(INTEG)	
CT1415V	HIGH LEVEL COMM	NU 1 ZERO VOLT REF	-----	1H86	
CT1415V	HIGH LEVEL COMM	NU 1 FIVE VOLT REF	-----	1H87	
CT1419V	LOW LEVEL COMM	NU 1 60 H/VOLT REF	-----	1L88	
CT1420V	LOW LEVEL COMM	NU 1 ZERO VOLT REF	-----	1L87	
CT1423V	LOW LEVEL COMM	NU 2 60 M/VOLT REF	-----	2L86	
CT1424V	LOW LEVEL COMM	NU 2 ZERO VOLT REF	-----	2L87	



## SC 017-20 TAPE RECORDERS

STATUS REPORT - MÉA STATEMENT OF DESCRIPTION  
OPERATIONAL TAPE RECORDER BY CHANNEL

	TRK CH
PCM DIGITAL CONVERTED	1-D1
PCM DIGITAL CONVERTED	2-02
PCM CLOCK 51.2 H1/H2 & LU	3-D3
PCM DIGITAL CONVERTED	4-D4
PCM DIGITAL CONVERTED	5-D5
CT138IV LO LEVEL COMMUTATOR NC2-DPDM OUT	6-A1
CT138IV HI LEVEL COMMUTATOR NC1-DPDM OUT	7-A2
ST138IV LO LEVEL COMMUTATOR NC1-DPDM OUT	8-A3
ST138IV HI LEVEL COMMUTATOR NC2-DPDM OUT	9-A4
GT1410F 2SKC REF OSC-TIME	10-A5
	11-A6
	12-A7
	13-A8
	14-A9



## SC 017-20 TAPE RECORDERS

## FLIGHT QUALIFICATION TAPE RECORDER BY CHANNEL

## MEAS ID MEASUREMENT DESCRIPTION

MEAS ID	MEASUREMENT DESCRIPTION	RESPONSE	CH NO
LT1582V	H1 LEVEL COMMUTATOR NC 1-DPDM CUT	SHRT BLK	F-01
LT1570V	MODULATION PAK-1K COMP-SITE CUT	SHRT BLK	F-02
ST1582V	H1 LEVEL COMMUTATOR NC2-UPDM OUT	SHRT BLK	F-03
CT1580V	LO LEVEL COMMUTATOR NC2-DFUM OUT	SHRT BLK	F-04
CA2530D	Y AXIS VIBR-CM LEB-KICKRING	WIDEBAND	F-05
LA2531D	Z AXIS VIBR-CM LEB-KICKRING	WIDEBAND	F-06
CT1541F	SOK REF USC-TIME	IRIG 12	F-07
CT1541F	SOKC REF USC-TIME	IRIG 13	F-08
SA2215D	Z AXIS VIBR-SM C2 TANK PNT	IRIG 11	F-C7,08
SA2216D	KADIAL VIBR-SM BM 4° SHELL	IRIG 12	F-C7,08
SA2217D	TANGENTIAL VIBR-SM BM 4° SHELL	IRIG 14	F-C7,08
SA2218J	RADIAL VIBR-SM EPS RAUATOR PNL	IRIG 15	F-C7,08
SA2020G	STRAIN-AXIAL TENSION BOLT BEAM 2	IRIG 16	F-C7,08
CT1380V	LU LEVEL COMMUTATOR NC1-UPDM OUT	SHRT BLK	F-05
LA2534D	X AXIS VIER-CM LES SEP MECHANISM	WIDEBAND	F-1C
SA2210D	X AXIS VIB-SM AFT BLKH NEAR FC	WIDEBAND	F-11
SA2211D	KADIAL VIBR-SM AFT BLKH NEAR FC	WIDEBAND	F-12
SA2212D	X AXIS VIBR-HE PRESSURE PANEL	WIDEBAND	F-13
SA2213D	TANGENTIAL VIB-HE PRESSURE PANEL	WIDEBAND	F-14



## APPENDIX

## MEASUREMENT LIST ABBREVIATIONS

AC	ALTERNATING CURRENT
ACCEL	ACCELERATION
ACCEL	ACCELEROMETER
ACCUM	ACCUMULATOR
ACTR	ACTUATOR
ADA	ANGULAR DIFFERENTIATING ACCELEROMETER
ADAPT	ADAPTER
ADC	ANALOG TO DIGITAL CONVERTER
AFC	AUTOMATIC FREQUENCY CONTROL
AG	ATTITUDE GYRO
AGAP	ATTITUDE GYRO ACCELEROMETER PACKAGE
AGC	APOLLO GUIDANCE COMPUTER
AGC	AUTOMATIC GAIN CONTROL
AGCU	ATTITUDE GYRO COUPLING UNIT
AM	AMPLITUDE MODULATION
AMP	AMPERES
AMP	AMPLIFIER
ANT	ANTENNA
ASTRO	ASTRONAUT
ATT	ATTITUDE
AUTO	AUTOMATIC
AUX	AUXILIARY
BARO	BAROMETRIC
BATT	BATTERY
BDPASS	BANDPASS
B/F/S	BTU PER SQUARE FOOT SECOND
BL	BONDLINE
CCW	COUNTERCLOCKWISE
CDU	COUPLING DISPLAY UNIT
CK	CHECK
CKT	CIRCUIT
CM	COMMAND MODULE
COMB	COMBINATION
COMD	COMMAND
COMM	COMMUTATOR
COND	CONDENSER
COND	CONDITIONER



CONT	CONTROL
CONTLR	CONTROLLER
COS	COSINE
CO2	CARBON DIOXIDE
CP	COLDPLATE
CPS	CYCLES PER SECOND
CTE	CENTRAL TIMING EQUIPMENT
CTR	COUNTER
CW	CLOCKWISE
D	DEGREES
D	DISPLAY
DAC	DIGITAL TO ANALOG CONVERTER
DC	DIRECT CURRENT
DEG	DEGREES
DEG F	DEGREES FAHRENHEIT
DEMOD	DEMODULATOR
DEPL	DEPLOY
DET	DETECTOR
DEV	DEVIATION
DIFF	DIFFERENTIAL
DISP	DISPLACEMENT
DISP	DISPLAY
DP	DIFFERENTIAL PRESSURE
DRG	DROGUE
DSE	DATA STORAGE EQUIPMENT
DSIF	DEEP SPACE INSTRUMENTATION FACILITY
DV	DELTA VELOCITY
ECA	ELECTRONIC CONTROL ASSEMBLY
ECA D	ELECTRONIC CONTROL ASSEMBLY DISPLAY
ECA P	ELECTRONIC CONTROL ASSEMBLY PITCH
ECA R	ELECTRONIC CONTROL ASSEMBLY ROLL
ECA X	ELECTRONIC CONTROL ASSEMBLY AUXILIARY
ECA Y	ELECTRONIC CONTROL ASSEMBLY YAW
ECDU	ELECTRONIC COUPLING DISPLAY UNIT
ECS	ENVIRONMENTAL CONTROL SYSTEM
EDS	EMERGENCY DETECTION SYSTEM
EKG	ELECTRO-CARDIOGRAM
ELECT	ELECTRONIC
ELS	EARTH LANDING SYSTEM
EMERG	EMERGENCY
ENG	ENGINE
EPS	ELECTRICAL POWER SYSTEM
EVAP	EVAPORATOR
EXT	EXTERNAL
FC	FUEL CELL
F/C	FUEL CELL
FDAI	FLIGHT DIRECTOR ATTITUDE INDICATOR
FM	FREQUENCY MODULATION



FQ	FLIGHT QUALIFICATION
FREQ	FREQUENCY
FWD	FORWARD
G	GRAVITATIONAL UNIT OF FORCE
GEN	GENERATOR
GMT	GREENWICH MEAN TIME
G-N	GUIDANCE AND NAVIGATION
GND	GROUND
GPI	GIMBAL POSITION INDICATOR
GPX	GIMBAL POSITION TRANSDUCER
GSE	GROUND SUPPORT EQUIPMENT
GYRO	GYROSCOPE
HE	HELIUM
HF	HIGH FREQUENCY
HI	HIGH
HS	HEAT SHIELD
H2	HYDROGEN
H2O	WATER
IFT	IN FLIGHT TEST
IG	INNER GIMBAL
IGA	INNER GIMBAL ANGLE
IMU	INERTIAL MEASUREMENT UNIT
IN	INLET
IN	INNER
IN	INPUT
IND	INDICATOR
INH2O	INCHES OF WATER
INT	INTERIOR
INT	INTERNAL
IRIG	INERTIAL RATE INTEGRATING GYROSCOPE
ISO	ISOLATION
IU	INSTRUMENT UNIT
JETT	JETTISON
KC	KILOCYCLES
KPPS	KILOPULSES PER SECOND
LB	POUNDS
LB/HR	POUNDS PER HOUR
LEB	LOWER EQUIPMENT BAY
LE/PC	LAUNCH ESCAPE PITCH CONTROL
LES	LAUNCH ESCAPE SYSTEM
LØ	LOW
LOC	LOCATION
MAMP	MILLIAMPERES
MAN	MANUAL



MANIF	MANIFOLD
MC	MEGACYCLES
MESC	MISSION EVENT SEQUENCE CONTROLLER
MG	MIDDLE GIMBAL
MGA	MIDDLE GIMBAL ANGLE
MIN	MINIMUM
MOD	MODULATED
MØN	MØNITOR
MSFN	MANNED SPACE FLIGHT NETWORK
MTR	MOTOR
MTVC	MANNED THRUST VECTOR CONTROL
MV	MILLIVOLTS
NEG	NEGATIVE
NØ	NUMBER
NRZ	NON RETURN TO ZERO
N2	NITROGEN
ØG	OUTER GIMBAL
ØGA	OUTER GIMBAL ANGLE
OPTX	OPTICS
OSC	OSCILLATOR
ØUT	OUTER
ØUT	OUTPUT
ØX	OXIDIZER
Ø2	OXYGEN
P	PITCH
PA	POWER AMPLIFIER
PAM	PULSE AMPLITUDE MODULATION
PCM	PULSE CODE MODULATION
PCNT	PERCENT
PCT	PERCENT
PH	HYDROGEN ION CONCENTRATION
PH	PHASE
PIPA	PULSED INTEGRATING PENDULOUS ACCELEROMETER
PMP	PREMODULATION PROCESSOR
PNEUM	PNEUMOGRAPH
POS	POSITION
POS	POSITIVE
ØT	POTENTIOMETER
PPS	PULSES PER SECOND
PREAMP	PREAMPLIFIER
PRESS	PRESSURE
PRI	PRIMARY
PROG	PROGRAM
PROP	PROPELLANT
PS	POWER SUPPLY
PSA	POWER AND SERVO-ASSEMBLY
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSID	POUNDS PER SQUARE INCH DIFFERENTIAL
PSIG	POUNDS PER SQUARE INCH GAUGE



PTV	PITCH THRUST VECTOR
PU	PROPELLANT UTILIZATION
PVR	PRECISION VOLTAGE REFERENCE
PWR	POWER
PYRØ	PYROTECHNIC
QUAD	QUADRANT
QUAD	QUADRATURE
QUAN	QUANTITY
R	ROLL
RAD/H	RADIATION ABSORBED DOSE PER HOUR
RCS	REACTION CONTROL SYSTEM
RCVR	RECEIVER
REC	RECEIVER
RECOV	RECOVERY
REF	REFERENCE
REG	REGULATED
REG	REGULATOR
REL	RELEASE
RES	RESOLVER
RET	RETURN
RF	RADIO FREQUENCY
RG	RATE GYRO
RGP	RATE GYRO PACKAGE
RLY	RELAY
RMS	ROOT MEAN SQUARE
ROT	ROTATION
RSVR	RESOLVER
RZ	RETURN TO ZERO
SC	SPACECRAFT
SCØ	SUBCARRIER OSCILLATOR
SCS	STABILIZATION CONTROL SYSTEM
SCT	SCAN TELESCOPE
SEC	SECONDS
SECT	SECTOR
SEL	SELECTOR
SEP	SEPARATION
SEQ	SEQUENCER
SEXT	SEXTANT
SG	SIGNAL GENERATOR
SHLDDED	SHIELDED
SIG	SIGNAL
SIN	SINE
SM	SERVICE MODULE
SMRD	SPIN MOTOR ROTATION DETECTOR
SØL	SØLENOID
SPS	SERVICE PROPULSION SYSTEM
SQ	SQUARE
SQW	SQUARE WAVE
S/S	SAMPLES PER SECOND



STIM	STIMULUS
SUM	SUMMING
SUP	SUPPLY
SUPP	SUPPLY
SURF	SURFACE
SW	SWITCH
SXT	SEXTANT TELESCOPE
SYNC	SYNCHRONOUS
SYS	SYSTEM
T	TEMPERATURE
TACH	TACHOMETER
TC	TRANSFER CONTROL
TD	TIME DELAY
TEMP	TEMPERATURE
TH	THETA
TM	TELEMETRY
TP	TEST POINT
TR	TAPE RECORDER
TRUN	TRUNION
TV	TELEVISION
TVC	THRUST VECTOR CONTROL
TWR	TOWER
UDL	UP DATA LINK
UHF	ULTRA HIGH FREQUENCY
UNREG	UNREGULATED
V	VOLTS
VAC	VOLTS ALTERNATING CURRENT
VC $\ominus$	VOLTAGE CONTROLLED OSCILLATOR
VDC	VOLTS DIRECT CURRENT
VEH	VEHICLE
VEL	VELOCITY
VHF	VERY HIGH FREQUENCY
VHF/AM	VERY HIGH FREQUENCY AMPLITUDE MODULATION
VHF/FM	VERY HIGH FREQUENCY FREQUENCY MODULATION
VLV	VALVE
VLVS	VALVES
VOLT	VOLTAGE
VRMS	VOLTS ROOT MEAN SQUARE
WIND	WINDOW
XMTR	TRANSMITTER
XP $\ominus$ ONDER	TRANSPONDER
XTAL	CRYSTAL



Y  
YTV

YAW  
YAW THRUST VECTOR

1/2X  
1X  
2X  
16X

ONE HALF TIMES  
ONE TIME  
TWO TIMES  
SIXTEEN TIMES